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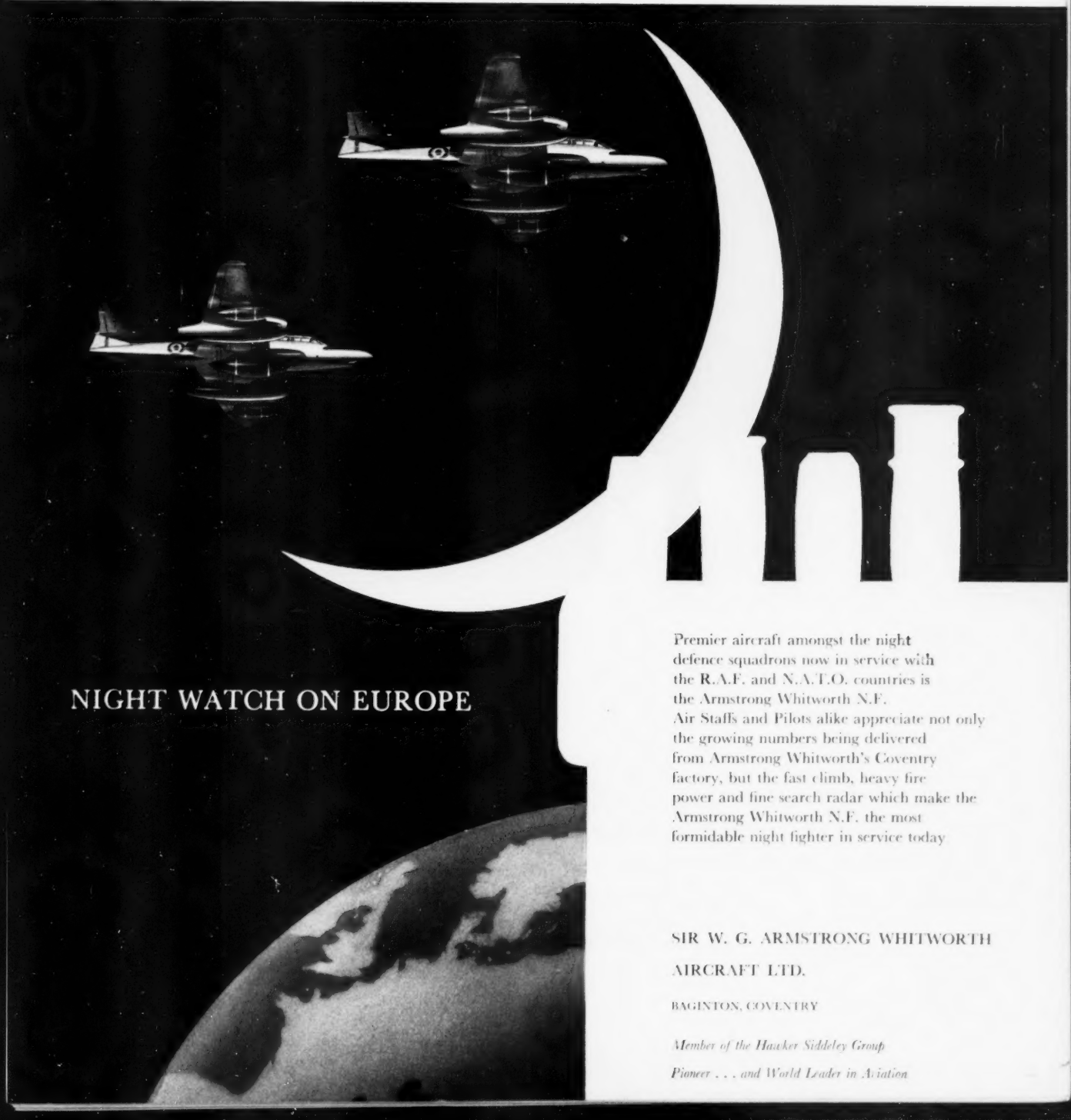
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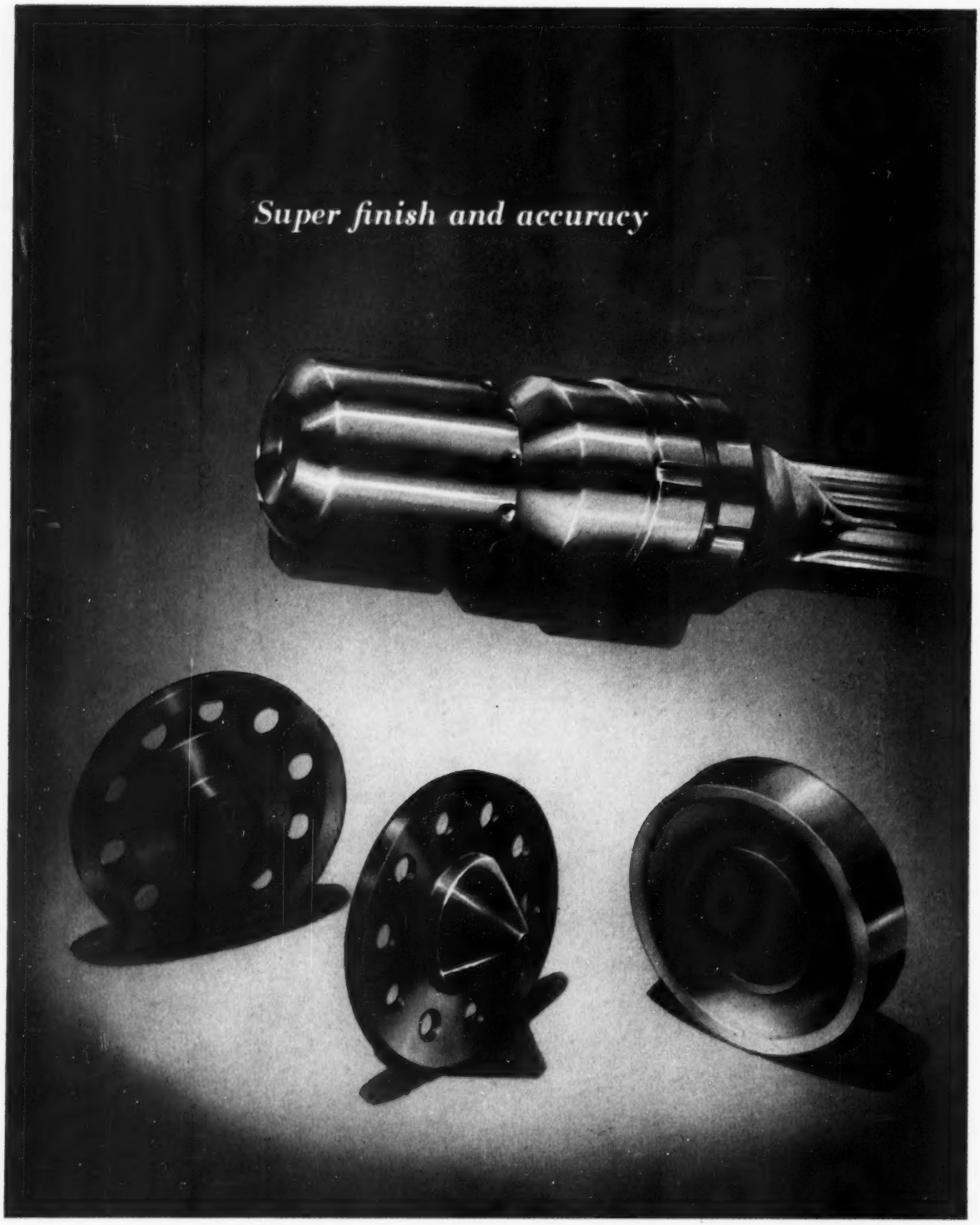

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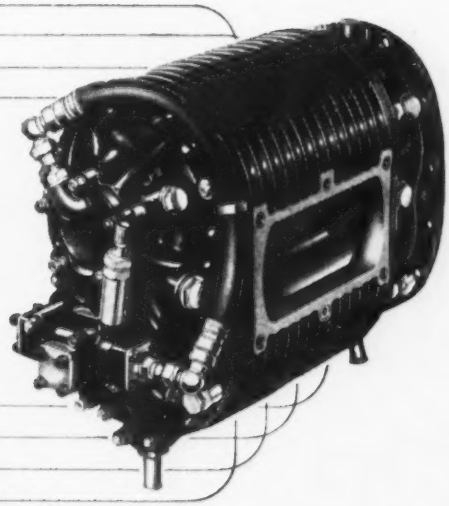
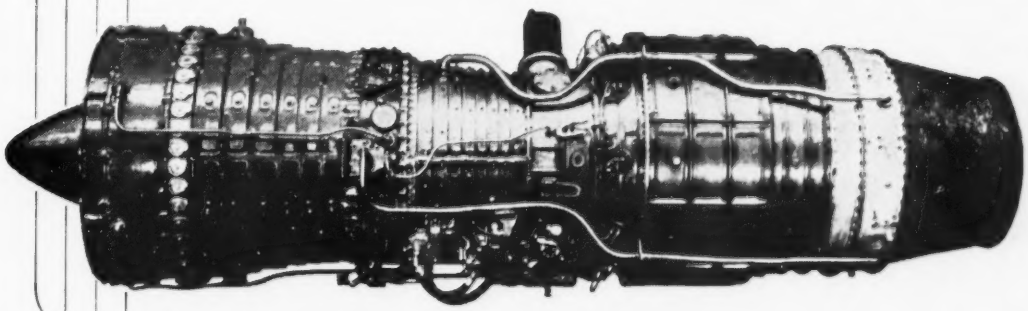


....or Engine tapped...?



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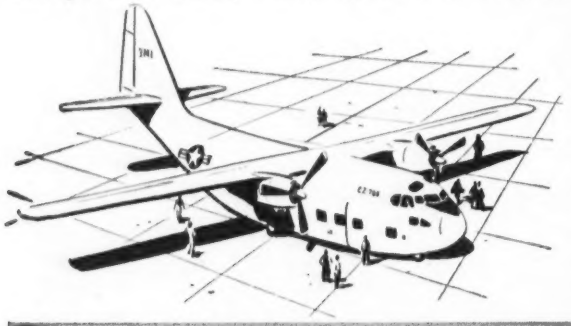
UNITED AIRCRAFT EXPORT CORPORATION

J-57 CHOSEN TO POWER F-100 AND OTHER AIRCRAFT

Pratt & Whitney Aircraft's powerful J-57 turbojet engine has been selected to power the single-engined North American F-100 fighter. Two other advanced Air Force fighter airplanes and an important Navy production aircraft are also scheduled to use the J-57. These production plans were announced in a recent letter from Frederick B. Rentschler, Chairman, and H. M. Horner, President, to stockholders of United Aircraft Corporation. Meanwhile Boeing Airplane Company has announced the selection of the J-57 for its new prototype jet transport. With J-57 production well under way, Pratt & Whitney Aircraft this year expects to produce, for the first time, more engine horsepower in turbojets than in piston engines. The J-48 is now in substantial production.

FIRST PRODUCTION C-123B DEMONSTRATED

The first production model of Chase Aircraft Company's C-123B "Flying Truck" was shown recently in flight and ground demonstrations. It is an assault transport, designed to carry large loads and land or take off from short, unprepared landing fields. The C-123B is powered by two Pratt & Whitney R-2800 piston engines, with Hamilton Standard Hydromatic propellers.



The aircraft can carry a maximum of 23,000 pounds in a variety of load combinations. It was demonstrated with 61 fully armed soldiers as one load, as well as with a 155 mm howitzer and 3/4-ton truck. As a hospital plane, it can carry 50 litter patients, plus 12 other persons.

HAMILTON STANDARD TESTS TURBO-HYDROMATIC PROPELLER

Hamilton Standard's giant new Turbo-Hydromatic propellers are now undergoing engine tests. These three-bladed, single-rotation propellers are some of the widest and largest hollow steel-bladed propellers ever built. They will be used on the Lockheed R7V-2, a Navy transport version of the Super Constellation, and fitted to 5700 horsepower Pratt & Whitney Aircraft T-34 turboprop engines. Flight tests of the prototype aircraft, with the new propellers and engines, are expected this year.

Meanwhile Hamilton Standard has completed design work and has started building experimental supersonic propellers for turboprop engines of extremely high shaft horsepower. Aeronautical engineers recognize that propellers with gas turbine engines offer greatly increased aircraft performance over piston engines, and greater over-all economy than jet engines up to near-sonic speeds. This development program illustrates the Division's pioneering work in a field which offers great promise for future commercial and military aviation.

CHANCE VOUGHT GUIDED MISSILE IN PRODUCTION

The U.S. Navy has officially disclosed the Regulus, a new, plane-like guided missile. It is in production at Chance Vought Aircraft, Dallas, Texas. Regulus is a surface-to-surface missile, designed to be launched from submarines, ships, or shore bases. Development work began in 1947, and flight tests have been successfully conducted in secret since 1950.

No performance details of the missile have been released other than admission that test versions have flown many times at both sub-sonic and supersonic speeds. Regulus is described as about 30 feet long and resembling a conventional, swept-wing jet fighter aircraft. Test versions of the missile have special landing gear systems. After launching and guidance tests, these missiles can be flown back to base and landed. Substantial savings will result, since each missile can be flown many times for training instead of being expended on each test.

Navy officials disclosed that a modernized World War II submarine, the Tunny, has been modified as a launching platform for Regulus missiles. The Tunny has been fitted with a launching rack and a water-tight, tank-like "hangar" which enables it to submerge with the missile aboard.

COMMERCIAL HELICOPTER USE EXPANDS

One of the strongest movements in world-wide aviation is the rapidly-expanding commercial use of helicopters. In the United States, Canada, Great Britain, and several European countries, Sikorsky S-55 types are being used in a growing list of aviation duties.

Sikorsky S-55s are flying regular airmail and cargo schedules in several metropolitan areas of the United States. New stops are continually being added, and night flying is now common. A number of private business organizations have purchased S-55s, for flexible transportation of personnel or cargo, for aerial survey work or other unique uses. Rockwell Manufacturing Company of Pittsburgh is one of these firms. Its Sikorsky is used for rapid travel between offices in Pittsburgh, and factories in seven Pennsylvania and Ohio cities.

Several firms in Canada use S-55s. One is the Aluminum Company of Canada, Ltd., which is now constructing a vast hydro-electric and aluminum smelting project in the rugged Kitimat region of British Columbia. Sikorskys are used to airlift key personnel, survey parties and vital construction materials to remote or otherwise inaccessible areas of the project.

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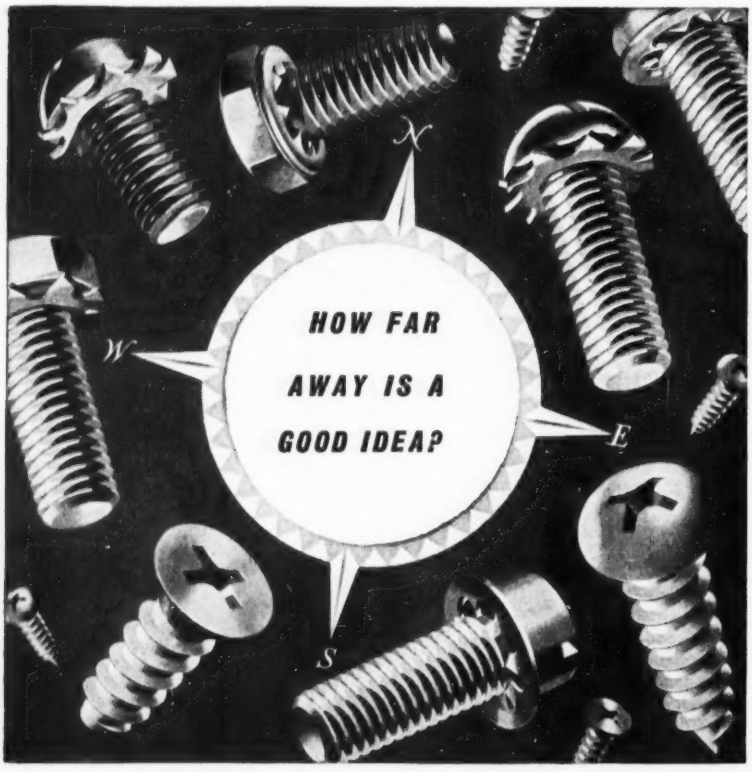

One of the Productivity Teams which visited the United States found that many American firms were using Sems Fastener Units and Parker-Kalon Self Tapping Screws. Thousands of British firms have been doing the same thing for a long time. Without blowing too loud a blast on our own trumpet might we point out that here in Birmingham we have a pretty useful productivity team of our own which knows a lot of ways of speeding up assembly work and reducing costs. This team is at the service of any firm which cares to

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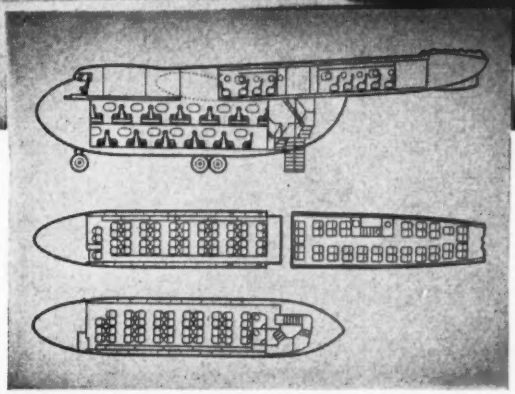

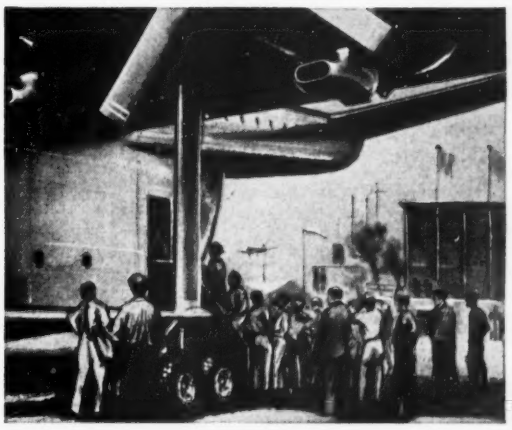

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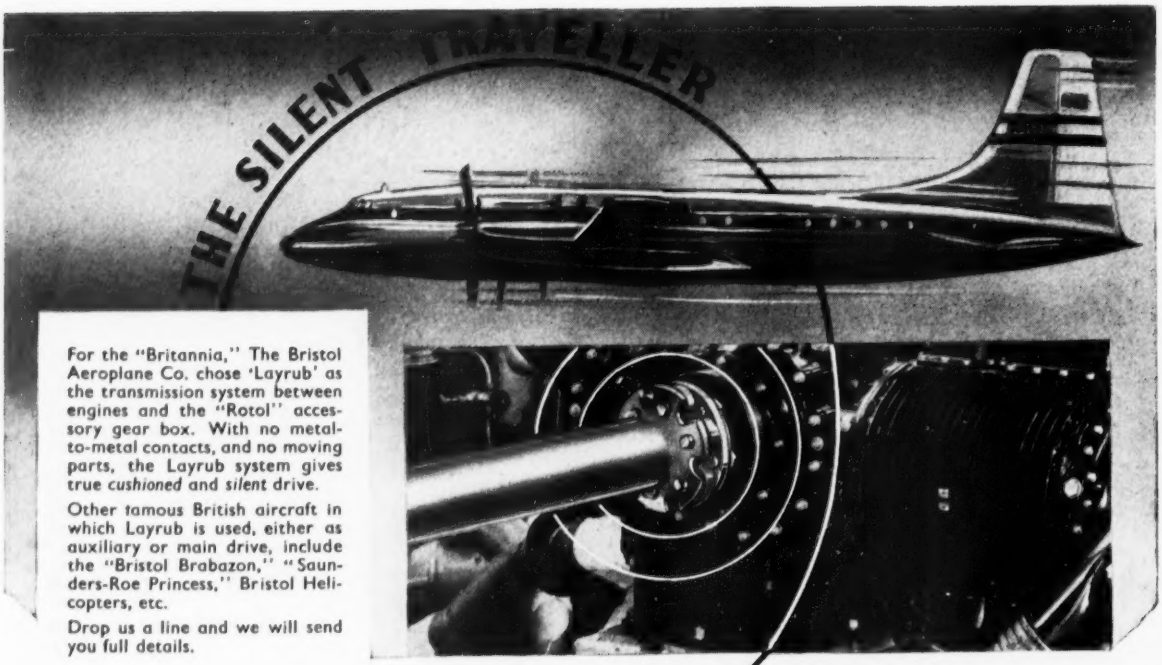

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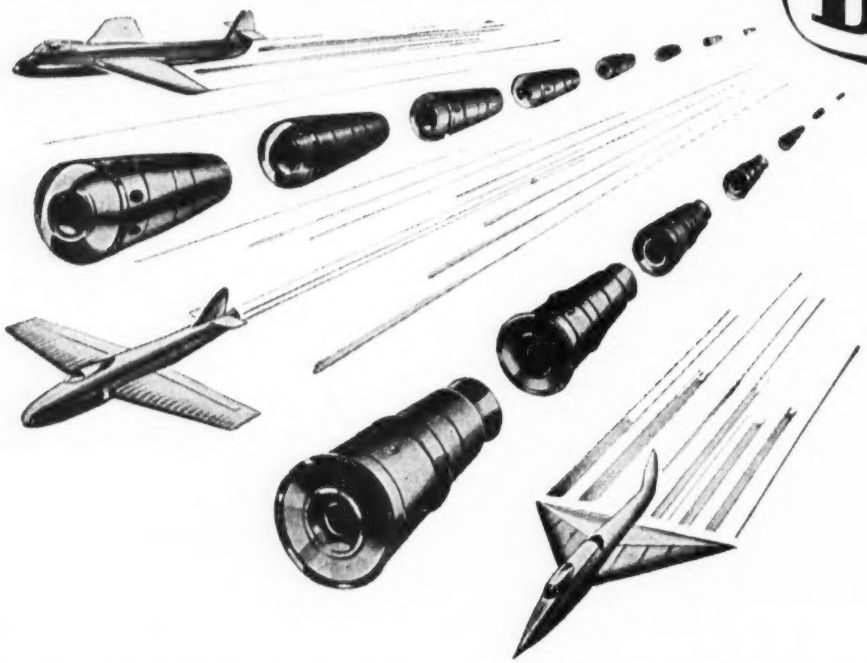

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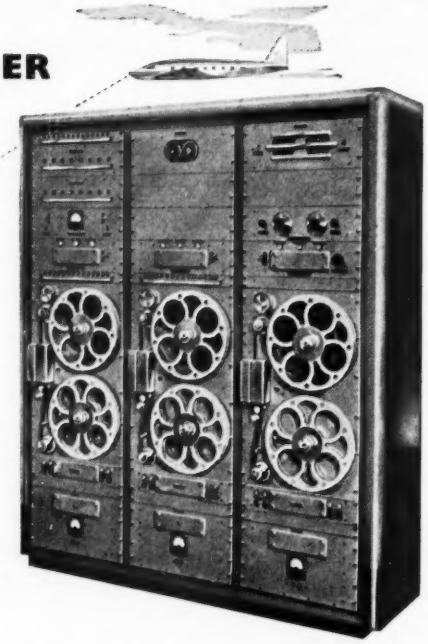

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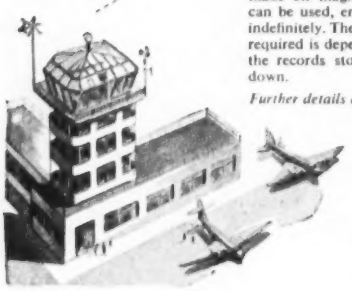

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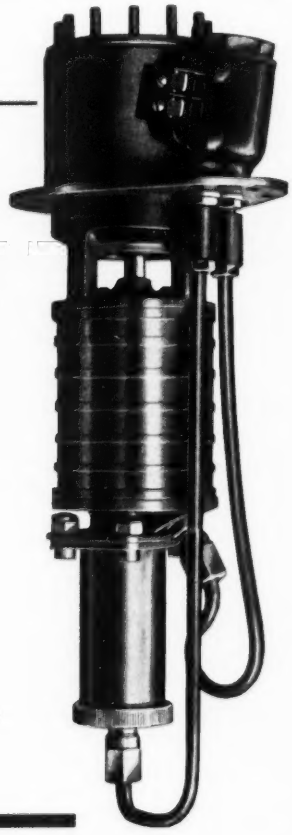

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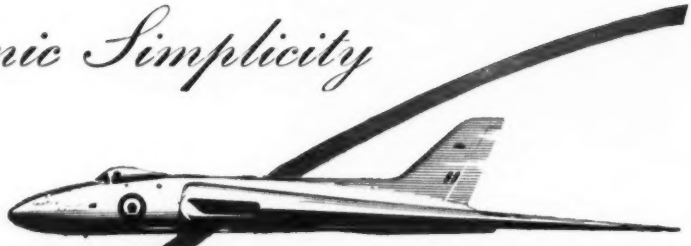

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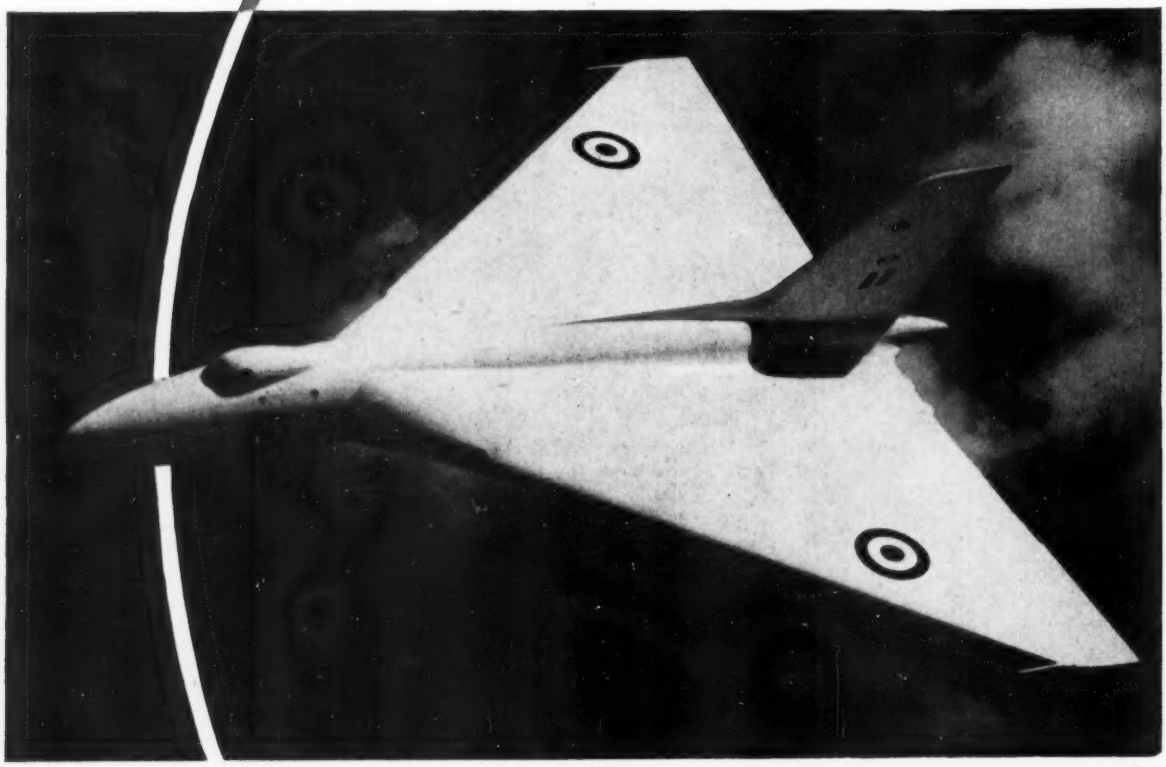

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Jets All Through?

TRAINERS have always been regarded as being among the simplest aircraft types for which to write a specification or prepare a design—even allowing for conflicting opinions on seating arrangements; but while this is still substantially true by comparison with first-line machines, the adjective "simple" can no longer be accurately applied. The specifications themselves are becoming increasingly difficult to write, because, like the operational types, the trainer now takes years rather than months to reach the production stage, and also because it is not at all clear what sort of duties and flying machines pilots of five to ten years hence may be required to handle.

For a long time, economy dictated that elementary training should be carried out with the aid of no more than Gipsy Major power. The Prentice broke this R.A.F. tradition, but its performance also suffered as a result of having too much added for too little increase in engine power. The Provost, with a radial engine of over 500 h.p., is a different matter, and it has proved to be the most lively aircraft to be used for training in the initial stages. Now the elementary jet trainer is on the way, prototypes are under construction, and in France examples are already flying.

The speeds for which an R.A.F. pilot must prepare himself may now range from 50 to 700 m.p.h. and the upper limit may soon be 1,000 m.p.h. The aircraft he flies have changed out of all recognition in a period of fifteen years. The man, on the other hand, has scarcely changed at all.

It may be asked how much, if any, of the old Tiger Moth kind of handling is necessary today for the training of a pilot who will quite soon be on Hunters or Canberras. Time and cost alone demand some specialization and preclude the elaborate and varied sort of training which takes into account every kind of aircraft and duty. Upon the answer to the question of how the first few hours of a pilot's career are to be flown depends the specification for the next generation of basic jet trainers.

Today no one knows from experience whether all-jet training from the first instructional flights is a practical step to take. The French—and, we believe, the Americans—are giving support to such a course. The R.A.F. may decide that effects of controls and first experience of flying are better given on a machine such as the Chipmunk and that this can then be followed quickly by a jet trainer of lively performance which can take over at about thirty hours and serve right through to the new, higher R.A.F. wings standard. The known choice at present is between something resembling a lightweight jet fighter with good flying characteristics on the one hand, and the more elementary lower-performance machine with turbojet power on the other. The former may be broadly exemplified by the tandem Fouga 170 and the latter by the side-by-side Provost jet conversion. The small batch of these jet Provosts which have already been ordered, and which should be delivered in a relatively short time, may be able to provide the R.A.F. with the initial experience they need finally to shape future policy.

In the Vampire Trainer, adapted from an earlier operational design, we already have an aircraft which in its class seems likely to fill the bill for a number of years, although with the advent of a jet basic trainer it would be desirable to carry the pilot farther than at present before conversion to Vampires, thus reducing the number of hours to be flown on the less economical machine.

Obviously, every effort must be made to avoid the necessity for an addition to the number of types and stages in training. On the other hand, as the performance of operational aircraft increases, the chances of reducing the number of types become more remote.

At the top end of the performance scale the gap is widening between the trainer and the operational machine, and some feel that there is already a need for a very high-performance trainer. Such a machine (which is not the same thing as a dual aircraft for type conversion, like the delta 707C) would need to embody most of the features of the operational fighter and to be capable of sonic speed. There are those who believe that, unlike the operational jet trainers of recent years and their counterparts in the past, such a machine could, with advantage, be the subject of an original design rather than an offshoot of an existing first-line type incorporating provision for elaborate operational equipment.

FROM ALL QUARTERS

THE CUSTER CCW-5 (two Continental SO-470B) makes its maiden flight at Oxnard, Calif., in the hands of Walter J. Davidson. The pusher is said to have taken off in under 100ft and to have landed at under 40 m.p.h.

Waterloo—L.A.P. Helicopters

PLANS are reported to be well advanced for an experimental helicopter service beween London Airport and the South Bank at Waterloo. The service may be operated by four-seat Bristol 171s of B.E.A. The problem of power-failure over built-up areas, which cannot be fully overcome until multi-engined helicopters are in service, would in this case be solved by the use of a route following the Thames. Floats would be fitted to the helicopters, enabling them to alight on the river in an emergency. Such an operation would yield valuable data on city-centre helicopter operations, and, in view of the excessive time taken by surface transport linking the airport with Waterloo Air Terminal, there should be no lack of passengers willing to pay the fare for a "taxi" service of this kind.

The idea of using floating platforms on the Thames as landing-places for rotating-wing aircraft was put forward as long ago as 1937 by W/C "Reggie" Brie, who is chief of B.E.A.'s helicopter unit at Gatwick.

Noise from the Air

THE B.B.C.'s television cameras visited R.A.F. Station Biggin Hill during a recent feature devoted to the problem of low flying aircraft. The programme opened with a squadron of Meteors making hedge-clipping runs across the aerodrome and so spectacular were the atmospherics visible around the aircraft that they must have diverted many viewers' attention from the main theme—the thunderous noise.

Three people, a farmer, doctor and teacher, who had written to the Air Ministry on the subject, were invited to represent the public and they put forward their views well and emphatically.

A short film was shown, illustrating the obviously very disturbing effect that low-flying aircraft have on grazing cattle. Viewers were informed that this is serious only during calving or lambing time and that even then relatively few cases of actual loss or injury have been reported. The farmer's solution was simple, if impracticable—train pilots overseas. The doctor explained that the continual noise of aircraft flying over his hospital made normal conversation with patients impossible and stethoscopic examinations difficult, created trouble in his operating theatre, and had a harmful effect upon the nerves of those convalescing. The headmaster (who had chosen the site of his school for quietness) bitterly objected to "air monsters more terrifying than Frankenstein's trespassing above." Not only did they unsettle his pupils, they were a real danger: he cited the case where a low-flying aircraft crashed and killed several students in a games field. "If an accident occurred at my school," he asked, "would low flying then be banned? If so, why not do so now?"

A. Cdre. D. G. Morris, C.B.E., D.S.O., D.F.C., Sector Commander, answered admirably for the R.A.F. The Air Ministry, he said, were very concerned with the problem and fully sympathized with the people affected. Consequently the areas used for low flying were very carefully selected and such flying restricted as much as possible. But it was an important part of a pilot's training; it was difficult to master and much practice was required.

Film sequences were then shown illustrating the different appearance of the ground from medium and low heights and illustrated the difficulty of navigation when flying low. The air commodore explained that low flying was necessary in war in order to achieve tactical surprise and to provide some immunity from anti-aircraft fire and enemy fighters.

Next, sequences were shown of a wartime low-level attack against a large electrical factory; of rocket and cannon attacks against trains and troop concentrations during the invasion of Normandy; and of the famous Mosquito attack on Amiens prison to release French Maquis patriots on the eve of their execution. If we could do that during the war, explained A. Cdre. Morris, it was obvious that the R.A.F. must be able to mount a defence against similar attacks on this country. Most of the practice for such a defence must of necessity be done over Britain; it was not possible to reproduce the right conditions either in Canada or on the Continent. The public should remember that the elaborate ground organization, including units such as the Anti-aircraft command and the Royal Observer Corps, needed practice, too.

Jordan Survey Contract

VALUED at some £90,000, a contract for the photography and mapping of 85 per cent of the Hashemite Kingdom of Jordan has been placed with Hunting Aerosurveys, Ltd. The contract was awarded by the country's Ministry of Economy and the Special Services Division of the Economic Development Fund, which is part of the U.S. Technical Assistance Programme (Point IV).

The work, which is already begun, is divided into two parts: high-level small-scale photography and mapping of 30,000 sq miles, and medium-scale photography and mapping of a separate area of 4,300 sq miles. The first task will provide a topographic map for future planning and development, particularly for road and railway location; the second will assist the development of an area containing mineral deposits.

One expedition, using Dove G-AMYO and headed by Capt. F. C. Brown, is already working from Amman. Another, under the command of Capt. L. Haines, was due to set off this week in Dakota G-AMYW, which is specially equipped for high-level survey. The work of mapping, which will be carried out in Hunting's London laboratories, will take about two years to complete.

PHOTO SHIP: Claimed as the fastest aircraft of the aforementioned denomination is the Boeing RB-47E, sister ship of the B-47 medium bomber. The redesigned nose and bulged bomb doors will not be missed (we trust) by diligent spotters.

R.A.F.'s Prestwick Pioneers for Malaya

AS we briefly noted last week, the first of a batch of Prestwick Pioneers (Alvis Leonides) ordered for the Royal Air Force, was formally handed over last Friday at Prestwick Airport—where the makers' factory is situated. At least five have been ordered, and in the near future two are to go into service in Malaya—in which operational theatre the Pioneers' almost-helicopter-like performance should be of the greatest value.

Handing over the aircraft to Air Marshal Sir Robert Jones (Controller of Engineering and Equipment, Air Ministry), G/C. D. F. McIntyre (managing director of Scottish Aviation) said that "this end of the country" had been able to make a very great contribution to British shipbuilding. "I think," he added, "we can do the same with aircraft manufacture if sufficient employment is offered to the people of Scotland." Mr. McIntyre paid tribute to Mr. Robert McIntyre, the company's designer; then, referring to the forthcoming twin-engined civil version of the Pioneer, he said he thought that these two types would establish aircraft design and manufacture in Scotland.

Air Marshal Sir Robert Jones, accepting the new aircraft, expressed his gratification at receiving the first aircraft wholly designed and wholly produced in Scotland. He had seen the Prestwick Pioneer perform, and had also seen the places—in Malaya—to which it was going, and he was perfectly convinced it would do its duty ably and well. The Air Force had a great regard for the work done by Scottish Aviation since the time when the firm looked after the Transatlantic ferry aircraft.

During a luncheon following the acceptance, Sir Robert said it was a tribute to the designers and workmanship that Pioneers were being sent direct from the factory to an operational station, instead of going through the usual period with a home squadron. Within eight to ten weeks they would be in operation in Malaya.

The Duke of Hamilton, a director of the company, said that the Pioneer was the first aircraft built in Scotland since the firm of Beardmore built the Inflexible; that aircraft was of German design, whereas the Pioneer was both designed and manufactured by Scottish skill and Scottish workmanship.

Skyways Directorship

A NEW appointment to the board of Skyways, Ltd., is that of Mr. Charles F. Dickson, O.B.E., who is also a director of Austin Crompton Parkinson Electric Vehicles, Ltd.; Crompton Parkinson, Ltd.; I.T.D., Ltd.; and Young Accumulator Co., Ltd. The Skyways group includes a fleet of 28 Yorks, engaged in both trooping and charter work. Its chairman is Mr. David Brown and the managing director is Mr. Eric Rylands; also on the board are Brig. Gen. A. C. Critchley and Sir Wavell Wakefield.

R.A.F. Senior Appointments

SOME important changes in R.A.F. senior appointments were announced last week as having received the approval of Her Majesty the Queen.

Air Marshal Sir John Boothman, K.B.E., C.B., D.F.C., A.F.C., Controller of Supplies (Air) at the Ministry of Supply, and an Additional Member of the Air Council, is appointed A.O.C-in-C. Coastal Command, with effect from November 15th. He will be succeeded at the Ministry by Air Chief Marshal Sir John W. Baker, K.C.B., M.C., D.F.C.

Sir John Baker accordingly vacates his post as Vice-Chief of the Air Staff, giving place to A.V-M. W. A. D. Brook, C.B., C.B.E., who will be given the acting rank of air marshal.

At Coastal Command, Sir John Boothman will take over from Air Marshal Sir Alick Stevens, K.B.E., C.B., who is retiring.

Sir John Boothman's posting, we believe, sets a precedent. In the past it has been the custom to appoint senior officers to technical posts in the supply departments—moves which largely detach them from Service routine and place them in a predominantly civil organization in which they are in daily contact with industrial and commercial affairs. Such officers—who in many instances are approaching retirement age—seldom return to purely R.A.F. duty; more often they accept senior posts in the industry, which welcomes the value of their wide experience. The Command H.Q. appointment of the C. of S. (A) suggests that future policy will recognize that a technical post in a supply department is not necessarily a culmination; that rather will it form a desirable and logical step in the career of a General Duties officer. If this in fact is the case, it may mean that these supply department posts will sometimes be occupied by younger men; and in saying so we cast no aspersions whatever on Sir John Boothman, who is a young 52 and whose affable efficiency in executing his M.o.S. duties is very generally recognized.

THE PRESTWICK PIONEER, ordered for the R.A.F. and—as related in the adjacent paragraphs—to go into almost immediate service in Malaya.

Brief biographical notes on the careers of the four officers concerned in the new appointments are as follows :—

Air Marshal Sir John Boothman.—Born 1901, educated at Harrow County School, and drove for the French Red Cross in the Balkans at the age of 17. Commissioned in the R.A.F. in 1921, and served in Iraq 1926-28. In 1931, as a flight lieutenant flying a Supermarine S.6B, he won the Schneider Trophy outright for Great Britain. Early in the war he was in the Directorate of Operational Requirements, Air Ministry; in 1943-44 commanded No. 106 Gp., a P.R. group in Coastal Command; in 1944-45 commanded the A. and A.E.E., Boscombe Down; was next A.C.A.S. (Technical Requirements), Air Ministry; went to Iraq as A.O.C.; and to his M.o.S. post in September 1950.

Air Chief Marshal Sir John Baker.—Born 1897, educated at Eastbourne College and the R.M.A., Woolwich, whence he was commissioned into the Royal Garrison Artillery in 1916; seconded to the R.F.C. in 1917 and in 1919 received the first R.A.F. permanent commission. His career in the inter-war years was typical of that of an efficient R.A.F. pilot, and when war broke out he had attained sufficiently senior rank to be appointed Deputy Director of Plans, Air Ministry. Thereafter his successive posts were Director of Bomber Operations; S.A.S.O., Air H.Q., India and later at H.Q. Air Command S.E. Asia; A.O.C. 12 Gp., Fighter Command; Director-General of Personnel, Air Ministry; A.O.C-in-C. Coastal Command; A.O.C-in-C. M.E.A.F.; Deputy Chief of the Air Staff (March-November, 1952); and Vice-Chief of the Air Staff, his present post.

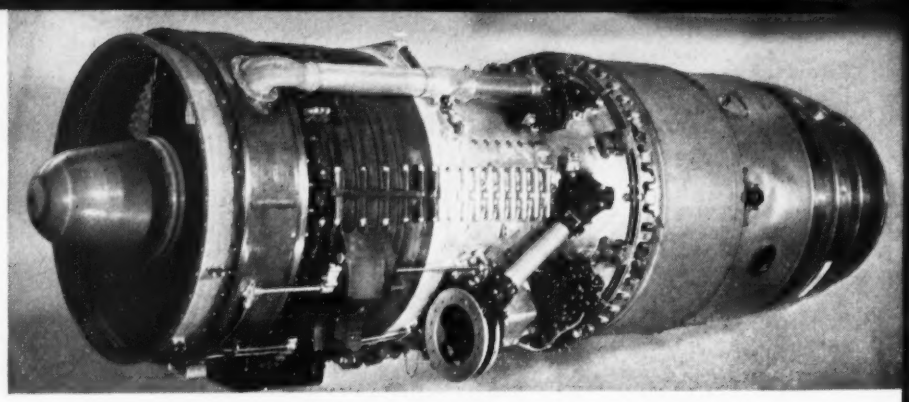
A. V-M. W. A. D. Brook.—Born 1901 and educated at Rugby and Cranwell, whence he was commissioned in 1921. For two years during the war he was S.A.S.O. at No. 4 Gp., Bomber Command and from August 1944 until the Japanese surrender he was Director of Plans (Air Staff), first at H.Q. Air Command, S.E. Asia, then at Supreme Allied H.Q., S.E. Asia. His post-war appointments were: Director of Policy (Air Staff), Air Ministry; Deputy Chief of Staff at H.Q. Allied Air Forces Central Europe; and (from September 1951) A.O.C. No. 3 Group, Bomber Command.

Air Marshal Sir Alick Stevens.—Born 1898 and educated at Victoria College, Jersey, joined the R.N.A.S. in 1916 and was embodied in the R.A.F. in 1918. His Second World War posts included the following: Director of Operations (Naval Co-operation), Air Ministry; S.A.S.O., No. 18 Gp., Coastal Command; and A.O.C. Gibraltar. After the war he was successively A.O.C. of Nos. 47, 48 and 4 Gps., Transport Command; A.O.C. No. 22 Gp., Technical Training Command; A.O.C. British Forces Aden; A.O.C. East Africa; S.A.S.O., Coastal Command (from June, 1950); and A.O.C-in-C. Coastal Command since June, 1951.

Further senior appointments are listed, with portraits, on page 211.

SENIOR OFFICERS, three of whom receive new appointments, as announced above; one is retiring. Left to right: Air Marshal Sir John Boothman, Air Chief Marshal Sir John Baker, A.V-M. W. A. D. Brook, Air Marshal Sir Alick Stevens; the last-named officer is retiring.

FROM ALL QUARTERS . . .



Successive Rolls-Royce turbojets seem to grow increasingly "clean" in external appearance, and the R.A.14, the existence of which is disclosed below, is clearly no exception to the rule.

The Latest Avon

THE Ministry of Supply have allowed mention of the latest Rolls-Royce Avon development. This is the R.A. 14, which has been type-tested at a thrust of 9,500 lb, without afterburning. This information is only now released, although the engine was type-tested and had completed many hours' flying as long ago as last April. It is now in production and being delivered, only 20 months after it was first run. The R.A.14 develops the greatest thrust yet achieved per square foot of frontal area—an important factor for fighter aircraft such as the Hunter and Swift—and is claimed to be the lightest engine for its power yet produced.

The Avon for the Comet 3, the R.A.16, which is a derated military Avon of 9,000 lb thrust, has also completed a type-test.

"Revolving-stage" Bomb-bay

FROM Glenn Martin in America comes news of a development in bomb-carrying designed to overcome the problems so far encountered in dropping a bomb from a conventional bay at high aircraft speed. An aeroplane travelling at high speed is subjected to heavy turbulence when the bomb-doors are opened. Furthermore, the bomb itself is liable to be caught and held at the mouth of the bay by this turbulence; and if it does fall away it may strike either the bomb immediately behind it or the tail of the aircraft. Large bombs may also "tumble," with consequent reduction in accuracy.

Martin claim to have found a solution in the form of a rotating platform, on which the bombs are carried. The under-side of the platform forms the under-surface of the fuselage, and the whole can be rotated about its fore-and-aft axis, thus exposing the bombs —as seen in the accompanying photograph—without creating a large opening in the fuselage. To ensure that a bomb does not tumble or strike the aircraft, it is "kicked" out of its shackle by two air-actuated plungers and a radius arm.

Two types of platform are specified. The "A" type carries all but the largest bombs, while the "B" type bulges-out the fuselage-belly contour so that the largest bomb can be carried internally. For loading, the whole platform is lowered from the aircraft, mounted on wheels and taken to the bomb dump, following the normal procedure. When loaded it is hoisted back into position by three standard bomb hoists. Rockets, particularly those of the folding-fin variety, can also be carried and fired in this way.

A CLUTCH of bombs in the experimental revolving bay now being tried by the Glenn Martin Company in the XB-51 (see news item above). In this photograph the bay is slightly turned from the loading position.

Foreshadowing Farnborough

ABOUT two-thirds of the 50 aircraft to be displayed or demonstrated at the S.B.A.C. Flying Display and Exhibition, to be held at Farnborough from September 7th-13th, will be turbine-powered. Among them will be the three "V" bombers—the Vickers-Armstrongs Valiant B.1, Avro Vulcan B.1 and Handley Page Victor B.1—and the newest versions of the Hawker Hunter and Supermarine Swift intercepters. The all-weather fighter class will be represented by Britain's two pre-eminent examples —the Gloster Javelin F(AW)1 and D.H.110. (The 110, incidentally, is now under development for the Fleet Air Arm and will be flying in Naval colours.) Dominant in bulk and capacity will be the Blackburn Beverley C.1 heavy freighter, now in production for the R.A.F., and—affording a comparison of extraordinary interest in that both are capable of operating from very confined spaces—there will be the Prestwick Pioneer and the D.H. Canada Beaver, both with the Alvis Leonides engine. Research and development aircraft will include the Short S.B.5, with variable-sweep wings, and a variety of flying test-beds.

Thursday, September 10th (one of the "non-public" days) will be devoted to commercial aircraft, including the de Havilland Comet, Vickers Viscount and the newest version of the Bristol Britannia, with revised tailpipes for the Proteus turboprops. The de Havilland Heron 2, not hitherto seen at Farnborough, will also be there. Helicopters are likely to include the winged (Mk 3) version of the Bristol 173.

The three "public" days will be Friday, Saturday and Sunday, September 11th, 12th and 13th. Gates will be open at 10 a.m. and flying will be under way from 3 p.m. Tickets for Friday only can be obtained in advance through Autoparks, Ltd., 1-31 Maclise Road, Olympia, London W.14, or through agencies. Tickets for Saturday and Sunday (and for Friday also) will be on sale at the gates. Admission and parking prices are :—

	Public première (Friday, Sept. 11th)	**Public days** (Sat., 12th and Sun., 13th)
Adults	£1	5s
Children	10s	2s 6d
Private car	£1 parking fee only	£1 10s with occupants
Motor coaches (single- or double-decker)	£2 parking fee only (parking inside ground)	10s parking fee only (coaches must be parked outside ground)
Motor cycles	5s parking fee only	2s 6d parking fee only
Pedal cycles	2s 6d parking fee only	1s parking fee only

NOTE.—Except in the case of private cars on the Saturday and Sunday, where the price includes occupants, the prices for vehicles are parking fees only, and admission to the display is extra.

The N.Z Race Viscount

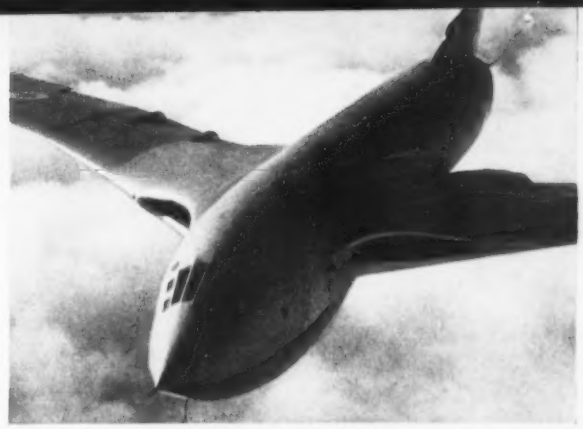
THE crew of the Viscount which B.E.A. has entered for the England to New Zealand air race has now been named. Mr. J. D. Profumo, Parliamentary Secretary to the Ministry of Civil Aviation, will be joined by Mr. Peter Masefield, chief executive of B.E.A., as auxiliary crew member. In command of the aircraft will be Capt. W. Baillie, B.E.A.'s chief flight captain; Capt. A. S. Johnson and Capt. S. E. Jones, who both have considerable Viscount experience, will be co-pilots. In charge of navigation will be B.E.A.'s senior route facilities officer, Mr. R. H. Chadwick. There will be two radio officers, Mr. I. Dalgleish, B.E.A. chief radio officer and Mr. E. Bristow, radio officer of the Corporation's Viscount flight. Vickers-Armstrongs are sending two engineers, and Rolls-Royce one, to look after the airframe and engines during the race. Capt. Baillie is arranging intensive crew-drill practice.

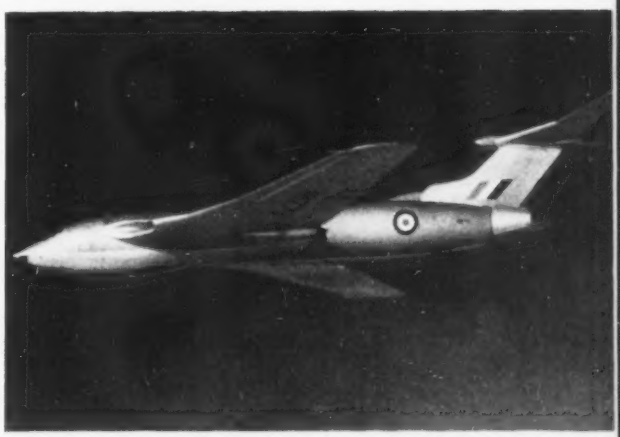
Mr. Profumo said last week, "I am not going as parliamentary secretary but as a crew member who will do whatever the captain of the aircraft instructs. Mr. Masefield and I will help with such jobs as refuelling at the stops on the flight. At times we shall be making cups of tea." Mr. Masefield will also pilot the aircraft for some of the time.

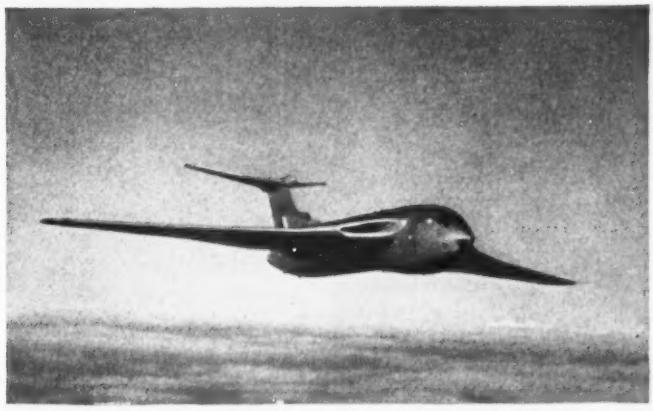
The aircraft will be a Viscount 700 prototype, lent to B.E.A. for the race by the Ministry of Supply, and called *Endeavour*, after the ship in which Captain Cook discovered New Zealand in 1769. The race starts from London Airport on October 8th.

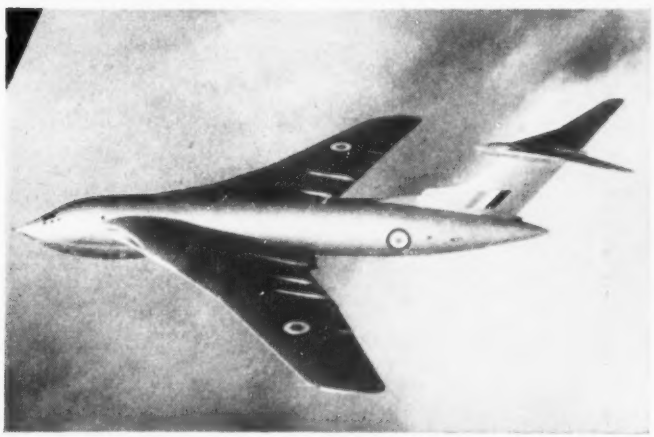
CRESCENT-WINGED BOMBER

Seven Aspects of the Handley Page Victor: New Pictures by the Shell Film Unit









OF REMARKABLE QUALITY, these studies of the Handley Page Victor were enlarged from a 35 mm film secured by a cameraman of the Shell Film Unit at the time of the Coronation Review. As yet, few aerial pictures have been taken of the aircraft, and we believe that this set will be appreciated by technically-minded readers as well as by recognition enthusiasts. Keeping close formation with the photographic Lincoln, Mr. Hazelden enabled the crescentic V-bomber, lately re-engined with four Armstrong Siddeley Sapphires, to be seen from several new angles. Frequent use of the tail-position air-brakes (clearly seen in the top left picture) was required to slow down the Victor as it approached the camera.

HERE AND THERE

NOSEY: High and low-altitude reconnaissance is the duty of this new version of the Saab J-29, now flying in Sweden. It will be seen that the nose has been redesigned to accommodate cameras (up to six can be installed), though the basic design remains unchanged. The Swedish Air Force designation is S-29C.

Records Confirmed

THE Royal Aero Club announces that the F.A.I. has confirmed W/C. Gibb's height record of 63,668ft, Lt. Cmdr. M. J. Lithgow's London-Paris and Paris-London speed records of 669.3 m.p.h. and 664.3 m.p.h., and the London-Copenhagen record by a B.E.A. Viscount of 249.9 m.p.h.

On the Home Stretch

FOR the England to New Zealand Race the R.A.A.F. is lending G.C.A. and D.M.E. equipment for use at the finishing-point at Harewood Airport, Christchurch. R.A.A.F. personnel will operate the equipment, and a special unit is being formed for this purpose.

Curtiss-Wright in Europe

A EUROPEAN subsidiary of Curtiss-Wright has been formed in Amsterdam, Holland. The new company, called Curtiss-Wright Europa, N.V., will manufacture parts and accessories for the J-65 engines installed in the Republic F-84F, which will soon be delivered to NATO countries. The new subsidiary is wholly owned by the parent company.

B-47's Long Hop

THE U.S.A.F. crew who recently flew a B-47 from the United States to Fairford, Glos, at a speed of 602 m.p.h. set off from Fairford for Tampa, Florida, on August 4th. They covered the 4,450 miles in a single 9 hr 53 min stage, air-refuelling off Southern Ireland. Their speed was 454 m.p.h. This is believed to be the greatest point-to-point distance so far covered in one stage by a jet aircraft.

Mrs. Derry Receives Award

AS recorded last week, the late John Derry was voted "Airman of the Year" by members of 17 air youth organizations, holding their annual meeting in New York. His widow, Mrs. Eve Derry, flew there last week-end to accept a trophy at a banquet held on Monday by the American Civil Air Patrol.

Second Escape

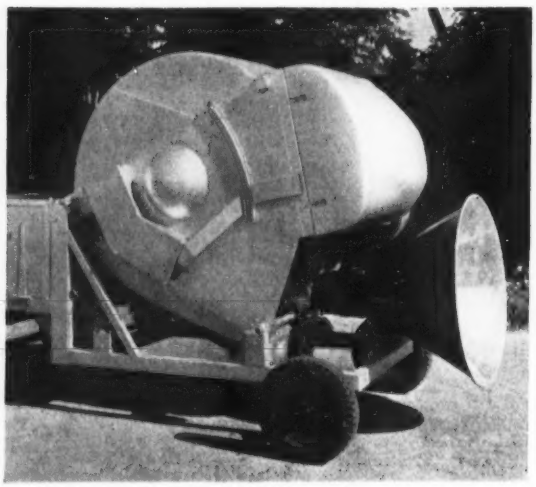
WHEN he got into difficulties during a loop in a Meteor 4 over Bourne, Cambs, last Monday, W/C. L. H. Trent, V.C., baled out and landed safely in the village. The aircraft crashed harmlessly in a field. W/C. Trent won his V.C. for heroism in a raid on a Dutch power station, during which he was shot down. He subsequently played a part in the mass escape from Stalag Luft III.

The Duke in a Devon Again

THE DUKE OF EDINBURGH flew from Cowes Regatta in an R.A.F. Devon on Saturday, to join the Queen at Balmoral. He crossed by launch to the Royal Southern Yacht Club at Hamble, where he was met by Air Chief Marshal Sir Hugh Walmsley, managing director of Air Service Training, Ltd., and G/C. E. A. Warfield, director of training, who drove him to the company's airfield, where the Devon was waiting. The Duke's instructor, F/L. C. R. Gordon, was in the co-pilot's seat on the flight north.

Tankers While You Wait

ONE of the new developments by Flight Refuelling, Ltd., is a self-contained pack unit which, when mounted in the bomb-bay of a standard bomber, will convert it into a tanker aircraft; installation takes only 30 minutes. The equipment can be connected to the existing piping and electrical system of the bomber. Fuel to be transferred is carried in tanks for which sufficient space remains in the bomb-bay after installation of the pack. On the ground the unit is transported, as shown here, on a vehicle similar to a bomb trolley.



REFUELLING PACK: The conversion unit referred to above ("Tankers while you Wait").

Desert Rescue by Helicopter

WHEN a U.S.A.F. C-119 came down in the North African desert last Sunday the 24 occupants baled out safely. Located by searching aircraft, they were then picked up by helicopters and taken to the hospital at Wheelus A.F.B., near Tripoli, 60 miles away.

Far-North Sunderlands

TWO Sunderlands left Pembroke Dock last Monday for Young Sound in Greenland. They are to start the airlift (details of which appeared in *Flight* for July 17th) of supplies for the British North Greenland expedition to Britannia Lake, 190 miles away. This is the third year in which a similar lift has been undertaken to supply this long-term expedition.

Civil Service—

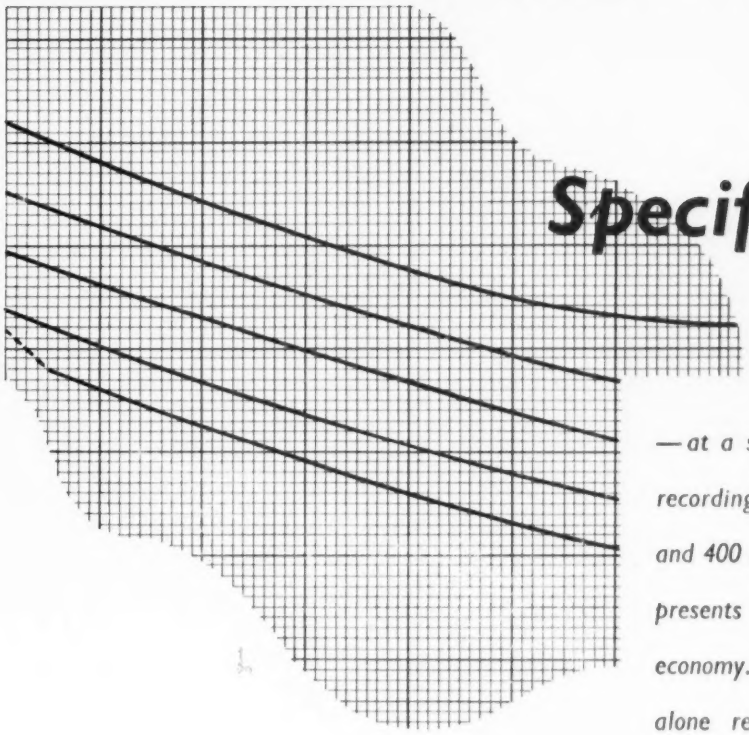
SINCE beginning their trans-Pacific airlift for the Military Air Transport Service on July 8th, 1950, United Airlines have made 930 round trips and covered 12,500,000 miles. Some 25,000 troops were carried and cargo has included 262 tons of ammunition, 334 tons of "whole blood" and medical supplies, 2,235 tons of mail and 3,846 tons of other freight. Six DC-6s were used at first, later being replaced by DC-4s which averaged 327,000 miles each month.

—and Vice Versa

AN urgent appeal by the Iron Ore Company of Canada for additional air transport for their project at Knob Lake, P.Q., resulted in the hire of three R.C.A.F. North Stars. Over a five day period one million pounds of freight for a railway building programme were carried. The aircraft were drawn from an O.T.U. and were manned by double crews who gained useful experience from their charter flights.

Vacancies for Meteorologists?

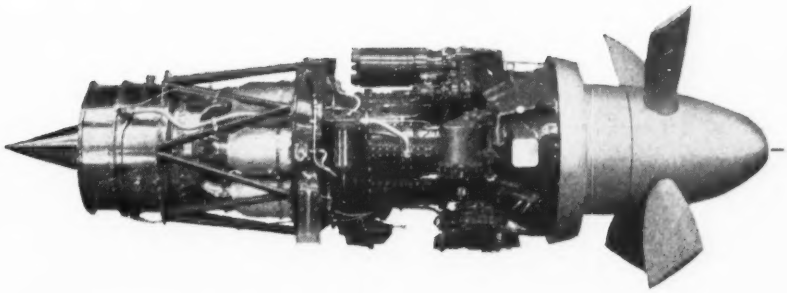
TWO hours before the big annual fly-past of the Soviet Air Force was to have taken place at Tushino aerodrome, near Moscow, last Sunday, Moscow radio announced that, owing to bad weather and low clouds, most of the events, and particularly the fly-past, would have to be cancelled. Plans for the fly-past included aircraft trailing huge portraits of Lenin and Stalin. A mass descent of paratroops from Il-12 troop carriers was also on the programme. So far, in all Soviet press and radio announcements on Air Force Day celebrations no mention has been made of Gen. Vassily Stalin, son of the late Premier, who, in all previous fly-pasts and Air Force celebrations always commanded the leading flight and squadron; last year there were rumours that he had been seriously hurt in a crash.



Specifically—

—at a specific weight of 0·52 lb./e.h.p. and recording a specific consumption at 30,000 ft. and 400 m.p.h. of 0·48 lb./e.h.p./hr. the Eland presents a prospect of marked operating economy. The reduction of installed weight alone represents a substantial increase in revenue potential of particular value in medium-range inter-city operation.

ELAND



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Willans performs here for the camera the act seen by thousands of spectators at Naval air displays—a delayed drop from a Westland-Sikorsky S-51 Dragonfly ("the perfect jumping platform"). (Below) The latest type of Irvin Training Outfit, as worn here by the author, consists of a 28ft back-type main canopy with releasable lift-webs and a 24ft reserve pack. Both harness and headgear are of nylon. The helmet, incidentally, is a parachuting version of the type designed for jet pilots by Helmets, Ltd., in collaboration with the Institute of Aviation Medicine.

THIS WAY OUT

Some Thoughts on Parachuting Technique

By T. W. WILLANS

THE author of this article, Major Terence ("Dumbo") Willans, writes from 11 years' experience of parachuting, in the course of which he has made some 180 descents. In 1950, performing the second of two tests of the Irving barometric release, he made a delayed drop of 16,000ft. Major Willans won fourth place for Britain in the 1951 World Parachuting Championship, and is the British representative on the F.A.I. Parachuting Commission, of which he is chairman.

IT was recently announced in the French Press that the second world parachuting championship would not be held in that country, because the rules, suggested by the Parachuting Commission of the Fédération Aéronautique Internationale, made the competition "elementary." The Commission had suggested that delays of 22 sec upwards envisaged by the French organizers could prove dangerous, and might result in fatal accidents. This brings into the open a favourite topic of conversation between civil parachutists. How dangerous is a parachute descent which includes a long free fall before parachute deployment?

There is no doubt that the delayed-drop technique practised by the French civil school, the result of many years' experience, reduces the risk to a minimum for the type of equipment at present available. The recommended swallow-diving position, with the back arched, has been shown to produce a high degree of stability during free fall, so permitting a clear view of the ground, and a good attitude in which to open the parachute.

It is, however, well known that a freely falling human body, making an attempt to remain in a face-down attitude will, after reaching terminal velocity, probably turn onto its back and spin about its short axis. While the rate of rotation is difficult to assess without special instrumentation, it was estimated in a technical article of uncertain date and Russian origin to reach a maximum of two revolutions per second. This figure appears possible.

The spin has been encountered by parachutists of several nationalities, in spite of attempts to maintain stability, and, once

THIS WAY OUT . . .

having reached what the subjects felt to be a high rate of rotation, has persisted in spite of any attempts to "unspin."

There are several well-authenticated instances in which a violent spin quickly produced in the subject inability to read a stopwatch—used to check distance fallen—or to judge height above ground. One very experienced parachutist said that he believed himself to be approaching unconsciousness when he pulled the ripcord. His parachute lines twisted and collapsed his canopy, which developed again as the lines unwound. Another parachutist, taking part in a recent competition, pulled his parachute while spinning, and when he felt that the physiological effects were becoming serious. Having personally experienced a slow spin of approximately one minute's duration of which the only effect was sickness, I later encountered a much faster spin; in about half a minute it resulted in a feeling of sickness and an inability to read the figures of a stopwatch or judge height above ground. Opening the parachute resulted in twisted lines and partial malfunction of and damage to the parachute canopy. A spin, incidentally, was reported in the technical Press as far back as 1935.

There have been a number of cases where the parachutist struck the ground having, apparently, made no effort to open his parachute. Some of these cases were probably due to over-confidence, where the parachutist tried to get as close to the ground as possible before pulling his ripcord. There seems to be no feeling of urgency or danger when falling freely at very low altitude.

The stopwatch, the parachutist's favourite means of determining opening height, has its limitations. Rate of descent at a given altitude varies from one parachutist to another due to differences in weight/drag ratio. Where attitude is not constant during the descent, the calculation of distance fallen on a time-elapsed basis is not only inaccurate, but may be highly dangerous. Should the parachutist become stabilized in a head-down position, whereas he has estimated for constantly changing attitude, he may reach the ground in less time than that which he calculated to his opening height.

The world parachuting championship in Yugoslavia showed parachutes opening at between approximately 1,500 and 1,600ft, against an estimated opening height of 1,000ft. Head down, at a speed probably approaching 200ft per second, things happen quickly.

Inclusion of an altimeter in the parachutist's equipment would seem to be of little use in delays terminating as low as 1,500ft. Reading and instrument errors may easily place the parachutist in a difficult situation. And with a very "unclean" and unstable body—"where," as an aeronautical engineer recently asked, "does one locate the static head?"

If it is found possible to stabilize a body in all planes during the free fall—that is, between the time of separation from the aircraft and deployment of the parachute—then some of the problems found in delayed-opening descents should be capable of solution. With the body held in a favourable attitude at the time of parachute deployment, and with a calculable rate of descent, long delays should be comparatively safe.

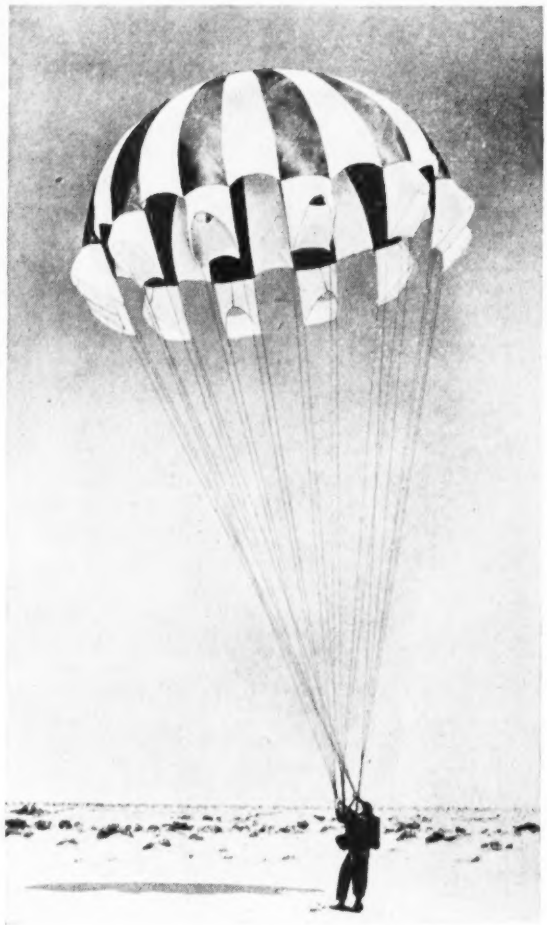
There are two main schools of thought, the one believing that suitable body-control technique will achieve the desired results, the other (mainly composed of those who have experienced fast spins) firmly convinced that it will not. The battle continues.

But how about the aviator who is forced to bale out at high altitude, where immediate parachute-opening may result in serious damage to the parachute perhaps, plus anoxia or frostbite? How is he affected by this state of affairs?

For the purpose of this discussion, I will discount the fully automatic ejection seat, which may prove to be a very satisfactory answer, and deal with the occupant of a static seat.

Cleverly avoiding all the more difficult problems by starting this jump at 30,000ft or less, and assuming a satisfactory oxygen supply, the man making an emergency bale-out can be quite well catered for. Given a barometric parachute-opening device set for, say, 10,000ft, it matters very little whether or not he is able to read an altimeter or other visual instrument during his free fall. Should he lose consciousness for any reason, the automatic release may be expected to deploy the parachute at the correct height, or within acceptable limits. A conventional parachute—the design of which has been well tried in its 27 years of service with the R.A.F., will then deposit him, one hopes, on a nice stretch of springy turf.

But how about the spin? It is unreasonable to expect an aviator—possibly damaged, and almost certainly feeling unhappy, to put into practice the technique recommended for body-control in free fall. It is not absolutely certain that he will spin or that, if he does, the result will be more serious than temporary sickness. During a long descent with the parachute inflated the sickness is likely to occur anyway. There does, however, remain the risk of a parachute malfunction, where arms and legs are spread during deployment; or possibly—though this is less likely—as a result of airflow characteristics peculiar to the spin.



"Guide surfaces"—designed to reduce opening shock, stabilize the descent and slow down landing-speed—identify the Pioneer series of parachutes. This model, the P9-B, embodies an automatic barometric release.

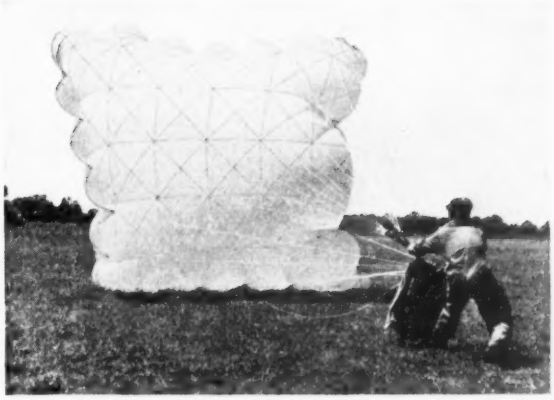
Because in parachuting things happen quickly, I believe in storing away in my mind stock answers to many of the obvious snags that may arise. They are useful when there is no time to work out ways and means on the spot, and here are a few of them.

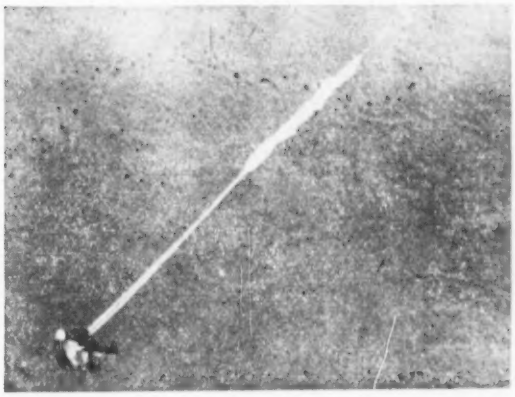
When opening a parachute in a spin, keep legs firmly together and arms as close to the chest as possible. Try not to throw the ripcord-operating hand wildly outward when opening the parachute, as some part of the canopy may sneak in between the arm and body.

If spinning, do not panic. Try to stop the spin by curling into a ball, waiting for a short period, and then shooting out arms and legs. It may be difficult to pull the legs in due to centrifugal force. Try "paddling" in the opposite direction or attempt to throw the shoulders round into a face-down position. If none of these dodges is successful, remember that the back-down position is sometimes quite comfortable, and keeps the wind out of your eyes.

If the parachute is not fitted with an automatic opening device, try to keep watch on the physiological effects of the spin. If there is any really serious tendency to pass out, pull the ripcord and take a chance on the opening shock. There is no guarantee that unconsciousness does occur, even in a fast spin; but, had it done so in the past, the subject would hardly have been in a position to return with the evidence.

If as a result of a spin the canopy has an unusual appearance on deployment, do not automatically assume that all is lost. Even a large number of twists can be harmless, and untwisting can be encouraged by leg exercise in the opposite direction. Given a little height, and perhaps some manual assistance, snags have a habit of sorting themselves out.





(Left) Of Russian design and Jugoslav manufacture, this Type PP-01 has a distinctive square canopy designed to reduce oscillation. The author, who brought it back from Jugoslavia two years ago after competing in the World Parachute Championship, describes it as "strong, reliable and well made." (Right) "Knowledge Dispels Fear" is the motto of the Parachute Training School. Live-testing, a major source of knowledge, is illustrated in the picture—one of an official series—by a U.S. Navy parachutist cutting away the rigging lines of a deliberately fouled parachute.

There is no magic in a parachute, which is, after all, only a much-improved version of a large sheet with a piece of string at each corner.

If by any long chance a parachute lingers in its pack when the ripcord is pulled in a spin, a sharp tweak with the hand should be enough to start things happening. It is not necessary to be a contortionist to reach the pack.

Try to judge height by glancing towards the horizon rather than directly below. Looking down over the shoulder while in a back-down spin seems to produce an unpleasant fun-fair sensation and, as the ground appears as a blur, may serve no useful purpose.

These few points, while intended purely for personal use, are offered here as suggestions for anyone who may have the opportunity to try them out in practice. They will help to pass the time, if nothing else.

There seems to be no doubt of the need for some form of stabilizer, which would be in operation between the time of leaving the aircraft and deployment of the parachute. From the packed-bulk point of view, its inclusion in emergency parachute equipment may present problems, but it will add only a small proportion to the already fairly considerable bulk of equipment used in premeditated drops. Presumably the high-altitude opening-shock characteristics of parachutes will apply in some degree to parachute-type stabilizers, and it remains to be seen whether, with a stabilizer large enough to do its work, the opening shock on deployment will be unacceptably high.

Most parachutists seem to agree that there is a requirement for a really stable parachute. Various lift-web techniques are practised by professionals and sporting parachutists, to reduce the chances of oscillation on landing. Some of these techniques are good, some wishful, but none really foolproof. Announce to your friends that you have the situation buttoned up, and on your very next jump the ground will leap at you from a ridiculous angle. Your friends will laugh; but console yourself with the thought that your turn will come.

Oscillation, while trouble enough on a comfortable grass field, can be embarrassing on tarmac and concrete. Any parachutist who has made a landing under these conditions would welcome a well-trained parachute that did not swing at the wrong moment. Professional parachutists voluntarily place themselves in situations in which they may be caught out by oscillation—but pity the poor pilot.

Having failed to notice any difference between the feel of a landing with a 32ft and a 28ft canopy, I might be the wrong person to ask this question. But (remembering that pilots are not used to the sort of rough-and-tumble business that occurs at the end of a descent) would it not be a good thing to use modern lightweight materials to increase the diameter and lower the striking velocity of emergency parachutes? Although it is generally accepted that an emergency descent is supposed to save the victim's life and not necessarily his ankles, a slow rate of descent might enable him to be back at work more quickly than would a fast one. Given an average piece of country on which to land, I for one would prefer my rate of descent to be as low as possible, and this attitude comes perhaps of landing on runways, roads, fences, farmyards and in water-filled ditches.

Any parachutist who has made a landing on a really windy day will have an idea of the drag produced by a parachute canopy, and of the desirability of getting rid of it as soon as possible after touchdown. There are two main ways of achieving this—release of the whole harness, or of one or both lift-webs. The old-time three-snap harness of pre-quick-release vintage is the neatest and most comfortable harness I have yet worn. In my opinion it is, when fitted with canopy releases, a thoroughly satisfactory piece of equipment.

During a fast landing, and the accompanying roll, it is quite usual for one of the parachutist's legs to become entangled in the parachute rigging lines. Releasing the complete harness might easily result in the victim being towed by one leg, but release of one side of the canopy under these conditions brings the whole outfit to a sudden and very welcome stop.

The really quickly releasable harness is, by virtue of its basic design, likely to be less comfortable than the three-snap type. If it is of a semi-quick-release variety—in which the leg straps are threaded through another part of the harness before entering the quick-release box, it is possible under certain conditions for the leg straps to jam. This happened to me during a descent in a 30 m.p.h. wind, and resulted in a cross-country drag of about 700 yards before the canopy collapsed in water.

When one is dragging in a face-down position, it is possible for dirt or objects or various kinds to lodge between the disc and body of a quick-release box, and so make its operation difficult or impossible. I saw a demonstration of this when a canopy passed over a wire fence, and a strand of wire immobilized the box. Where the canopy has passed over an obstruction, against which the parachutist has then become wedged, a knife is a useful tool to have handy. Anyone who may find it necessary to jump on a windy day could usefully carry one, and this applies particularly in the case of descents into water.

For the professional or sporting parachutist, the canopy-release system has an additional advantage. It allows the attachment of different canopies to one harness, thus making the carriage of several complete parachutes unnecessary when working away from repair facilities. The spare canopies, packed and complete with ripcords, can be attached to the basic harness as required.

It may be that, in discussing a few of the factors affecting the professional, sporting and let-me-out-of-here-quick types of parachutists, I have given the impression that the parachute as we know it is not a great deal of use. A large number of satisfied users would agree with me that this is not the case. There is, however (as in every other department of the aviation business) room for improvement.

There is a wide gap between the operating height and speed of some modern aircraft, and the height and speed at which a conventional parachute can be expected to behave normally. Because of the basic simplicity and soundness of the original design, it seems unlikely that a really revolutionary parachute will appear in the future.

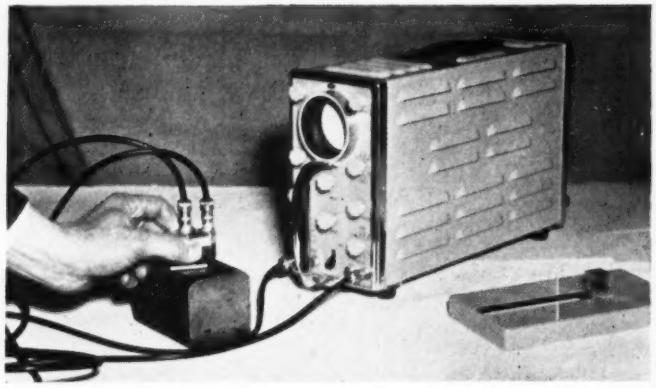
The main problem seems, therefore, to be that of bridging the gap by some other means: of finding a way in which a freely falling human body can descend from high altitude to, say, 10,000ft, arriving at the lower end of the journey in good condition. If this is in fact the problem, then the emergency parachute, in more or less its present form, it liable to remain with us for some time.

Emergency escape from aircraft is going to cause a good crop of headaches in the future; and when the last pilot steps out of the last piloted aircraft at the end of its last flight, perhaps we will have arrived at the neatest solution.

And, someone, please grab that last parachute for the Science Museum, before the wife of the last pilot gets her scissors into it.

NON-DESTRUCTIVE TESTING

Latest Developments in the Ultrasonic Method of Flaw Detection



In the Kelvin and Hughes Mk 5 miniature flaw-detector single-handed operation is achieved by use of the combined transceiver probe—which also provides many of the advantages of dual probes.

NON-DESTRUCTIVE testing of aircraft materials has of late years been brought very much to the fore by the requirements of gas turbine and high-speed-aircraft production. Limitations of some existing methods of examination have been avoided by the use of ultrasonic methods, which have made it possible to locate minute flaws at a distance of several feet. "Pipe," porosity, slag inclusions, hair cracks, blow-holes, laminations, fatigue cracks and welding flaws are among the hidden defects which ultrasonic detectors can reveal. Easy to carry and simple to operate, such sets can be transported to any point of the works or factory and enable inspections to be carried out very rapidly without dismantling assemblies.

Like many other inventions, this method of non-destructive testing originated during the war as a result of military needs. It became urgently necessary to develop a method of discovering the extremely small hair-line cracks which might cause the failure of armour plate, projectiles, engine parts, raw materials, etc. In November, 1939, the Hair-Line Cracks Sub-Committee of the Iron and Steel Institute considered reports on the work of Russian investigators, who claimed to be able to demonstrate the existence of cracks in steel by passing ultrasonic waves through the specimen and detecting the shadows caused by the interruption of the beam.

Having had many years of experience with ultrasonic devices, the firm of Henry Hughes and Son, Ltd. (now Kelvin and Hughes, Ltd.) was invited to investigate these claims, particularly the "shadow" method developed by Pohlman. They found that gross defects could be detected by this method but that hair-line cracks could not, the reason being that surface irregularities caused far greater variation in supersonic transmission than did small hair-line cracks.

It was evident, therefore, that a fundamentally different method of approach was required, and the possibility was examined of using the principle successfully applied by the same firm to the development of echo-sounding apparatus. When soundings are taken by this method, energy is sent out in the form of a very short pulse, concentrated into a narrow beam directed towards the seabed. Should this pulse encounter a submerged object the echo reaches the surface earlier than that from the seabed. In examining a metal specimen for a flaw, the thickness of the metal is equivalent to the depth of the sea, and in any defect below the surface will reflect the energy in the same manner as a submerged object in echo sounding, the echo being distinguished from that reflected from the boundary of the specimen by its earlier arrival.

It was soon found that, whereas with previous equipment the range of detection, even for gross defects, was limited to between 6 in and 8 in, the new method could detect minute hair-line cracks at a range of many feet. The apparatus was quickly developed into a portable form, and during the past decade there has been continuous further development. The versatility of the instrument was extended by the provision of additional units such as filters, high-power transmitters and special probes, as well as by the introduction of improved models. The instrument can be used not only on metals but also on many other homogeneous solids, provided that they are, in the main, of rectangular shape.

The versatility of the supersonic flaw-detector has been greatly increased by the development of transverse wave probes. This type of probe consists of a specially-shaped Perspex block on which is mounted an "x-cut" quartz crystal. This transmitting crystal is fed with energy by the flaw detector itself and generates longitudinal waves, which are transmitted through the Perspex block. By suitably proportioning this block it is possible to change the mode of the waves, in such a manner as to inject a beam of transverse waves at a shallow angle into the material under test. Any flaw or lack of homogenuity in the material will reflect a proportion of the waves back, and this will be picked up by the receiving probe, which is similar in construction to the transmitting probe. Since the wave transformation phenomena is reversible, the transverse wave will be converted back to a longitudinal wave, to which the receiving crystal responds.

When in use, transverse probes are disposed on the surface of the test material in a number of different ways, depending on the particular application. One of the most common methods of use is for forward scanning, which is the principle usually adopted for testing welded and riveted joints. The transverse probes may also be used for the detection of flaws parallel to the surface of the specimen. In this case the probes are used facing one another, and very clear flaw indications may be obtained on plate and billet sections between 2 in and 5 in thick.

Yet another field of applications was opened up when Kelvin and Hughes evolved a new technique for testing very thin plates for lamination. This technique is based on the fact that thin sheets of less than a critical minimum thickness do not transmit shear waves. In this type of application a signal is received only when the bond is sound, which is the reverse of the ordinary echo technique. The principle can be adapted either to the thickness testing of thin sheet and bonded material or to go-and-no-go gauges. It can, in general, be applied to the detection of lack of bond in specimens comprising a comparatively thin section bonded to a section of equal or greater thickness. Brazed joints, clad metals and alloys, and white-metalled components, have been successfully tested using this new technique and in addition, grain directionality in sheet and strip can be detected.

A combined probe recently introduced by Kelvin and Hughes consists of acoustically and electrically separated transmitter and receiver crystals mounted in a common exploring head. A single transmitter crystal is mounted in the centre and two receiver crystals located on either side of it farther back from the probe surfaces. In one plane the overall directional characteristic is equivalent to that of a single-crystal system and in a plane at right angles the "beams" of the transmitting and receiving crystals overlap in such a way as to provide some of the advantages of a "split beam" system in giving more accurate flaw location.

Most of the applications previously fulfilled by twin-probe systems can be covered with combined transceiver probes. In addition, the latter system can be applied to rolled billets and bars, forged billets and bars, most cast sections, rotor forgings, extrusions, etc.

The scope for ultrasonic equipment has been still further extended by the recent introduction of a new and much smaller instrument known as the Kelvin and Hughes Mk 5. This equipment is totally self-contained, measures only 17 in x 9 in x 5 in, and has a total weight of less than 30 lb.

The standard instrument operates from 200-250 volts 50 c.p.s. A.C. mains. The operating frequencies are chosen to suit the type of material being tested and are selected by means of a switch. The frequencies available are $\frac{3}{4}$, $1\frac{1}{4}$, $2\frac{1}{4}$, $2\frac{1}{2}$ and 5 m/cs.; intermediate frequencies can be obtained, if required, by the use of plug-in filters. The range represented by full deflection of the time base can be varied from 2 in to 12 ft when using the ordinary vertical probes. These distances are approximately halved when transverse wave probes are used.

As a result of the improved equipment now available, ultrasonic tests can now be carried out with a degree of certainty which was not possible when the first models were introduced. Cracks of only molecular thickness can be detected in most metals, providing the component is of such a shape that there is access for the probes. In some manufacturing operations the high rate of production might be a limiting factor, but many types of components can be adequately inspected at speeds which match production rates, and doubtless it is only a question of time before ultrasonic flaw-detection can satisfy all production needs. A.G.T.

CORONATION REVIEW
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"Flight" photographs

Near-champion and champion: (Left) Hugh O'Donnell, 14-year-old runner-up, weighs in. (Right) Wakefield Cup winner Joe Foster with his model.

WORLD MODEL CHAMPIONSHIPS, 1953

LONDONDERRY HOUSE had never looked like this before. This was the unanimous opinion of occupants—and a regular visitor—on the afternoon of Friday, July 31st. Heaps of thin, coffin-like boxes and personal luggage covered the entrance hall, as groups of young enthusiasts conversed, enquired and argued—in a dozen different languages. Some open boxes, the owners displaying their aircraft-model contents for the benefit of photographers, and a number of harassed officials, gave the final if bewildering indication that the 1953 Model Aircraft Championships were imminent, and that the reception for the competitors was being held in the Royal Aero Club Aviation Centre.

At the College of Aeronautics, Cranfield, after a practice-flying day, the contests (organized by the S.M.A.E.) began. The power-model contests took place on the Sunday. Competing were 48 modellers (from 13 countries) each of whom made three flights, timed up to a maximum of five minutes. With fine and decidedly un-English weather, no fewer than 22 maximum times were recorded. Only contestant to obtain three five-minute flights was Dave Kneeland of the U.S.A., with his model *Vapour Trails*. For this achievement (as we recorded last week) he gained the F.N.A.F.O.M. Cup, with G. Fuller of Britain (13 min 18 sec) second, and G. Vidossich of Italy (12 min 54 sec) third.

On the Monday the big attraction was the contest for the famed Wakefield Cup, awarded for the best duration performance by a "Wakefield"-class rubber-powered machine. Again the weather was fine and warm, and the number of maximum-time flights steadily increased as the morning progressed, and model after model twisted steeply up in the search for thermals. Halfway through the afternoon's flying, E. Scotto of the Argentine was announced as the first competitor to achieve three "maximums," followed shortly afterwards in this by J. Foster of the U.S.A., and by Britain's 14-year-old Hugh O'Donnell, the youngest competitor.

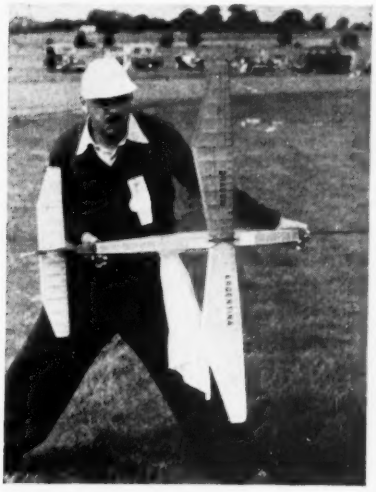
None of the remaining 54 contestants (from 17 countries) were able to equal the 15-minute total—G. Reich of the U.S.A. narrowly missing it by one second—and so a fly-off between the three finalists was made, following the official close of the contests. These flights were to be timed to the end, and not restricted to any maximum.

Scotto's model was first away. The atmosphere of suspense which by that time was holding everyone present was then heightened as two strands of O'Donnell's motor snapped while being wound (unlike his two rivals, he was using rubber already "tired" by a previous flight). Foster's machine soared up from the ground as O'Donnell, faced with a three-minute limit for take-off, knotted the broken strands, re-wound, and finally released his aircraft. The American and British machines both found thermals, and gained height rapidly, while Scotto's model came down after a flight of 2 min 24 sec. After an agonizingly long pause, it was seen that Foster had won, with a time of 7 min 25 sec, Hugh O'Donnell's brave attempt ending after 6 min 20 sec.

The team results reflected those of the individual winner and runner-up, the U.S.A. (total time 44 min 1 sec) winning the F.N.A. cup, with Britain (43 min 19 sec) second. Third was Sweden, with a total time of 43 min 1 sec.

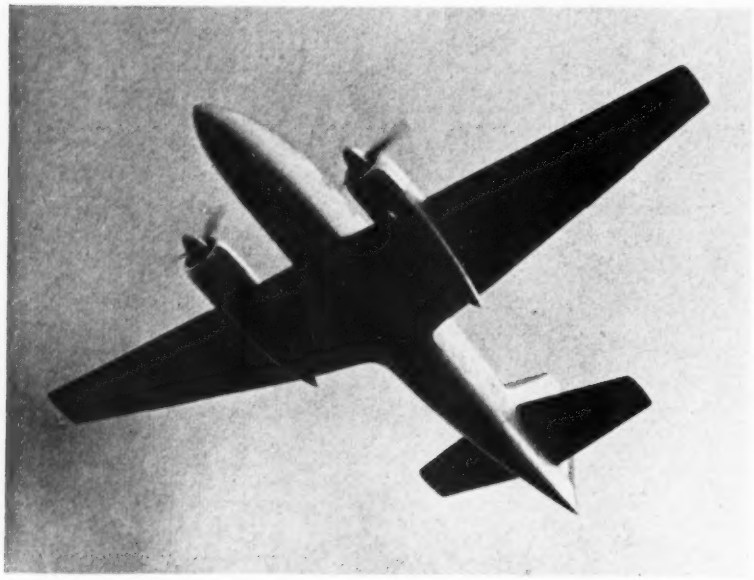
At a dinner in Mitchell Hall that evening, the various trophies were presented to the winners by Lady Goddard, whose husband, Sir Victor Goddard, Principal of the College, was also present. Especially admired was the beautiful Franjo Kluz Trophy (presented by Jugoslavia), the team award for the power contests, which was won by the U.S.A. (with Britain second and Italy third). Enthusiastic cheers from and for all the teams made the occasion an informal and vividly unforgettable experience for those present. After the presentation, team managers in turn gave brief messages to the truly international gathering; from the philosophical manager of the irrepressible Italian team came the reflection: "I am so happy not to have won a cup, so we have not so much weight to carry back."

"Flight" photographs



Argentine tragedy: taken within two minutes, these three pictures tell their own unhappy story. After wing failure on take-off, the crippled model continued to fly, erratically, for some 20 sec.

AIRCRAFT INTELLIGENCE



"Flight" photograph

TRIM TRANSPORT: Observers at the international display at Le Bourget the other week were impressed by the lively performance of the Marcel Dassault M.D.316 light transport, a development of the M.D.315 but with SNECMA 14X engines and a single fin and rudder.

Canada

De Havilland Canada Types. The U.S. Air Force and U.S. Army are displaying marked interest in the de Havilland Canada Otter 14-passenger, single-engined, high-wing monoplane. Mr. Russ Bannock, military sales manager of the company, is now in Washington for conferences at the Pentagon; meanwhile, the R.C.A.F. has ordered 12 Otters for search and rescue work, and the Ontario Department of Lands and Forests has ordered three. The basic cost of an Otter landplane is $75,000. If current negotiations in Washington are successfully concluded, the Air Force and Army would purchase four machines apiece for evaluation in various roles. Forerunner of the Otter—the Beaver—is still in quantity production both for the U.S.A.F. and U.S. Army. Over 500 Beavers have been built and scores of them have seen service in Korea as light transports, supply droppers and ambulances. The U.S. Government recently agreed to provide 25 to the Republic of Korea Army.

U.S.A.

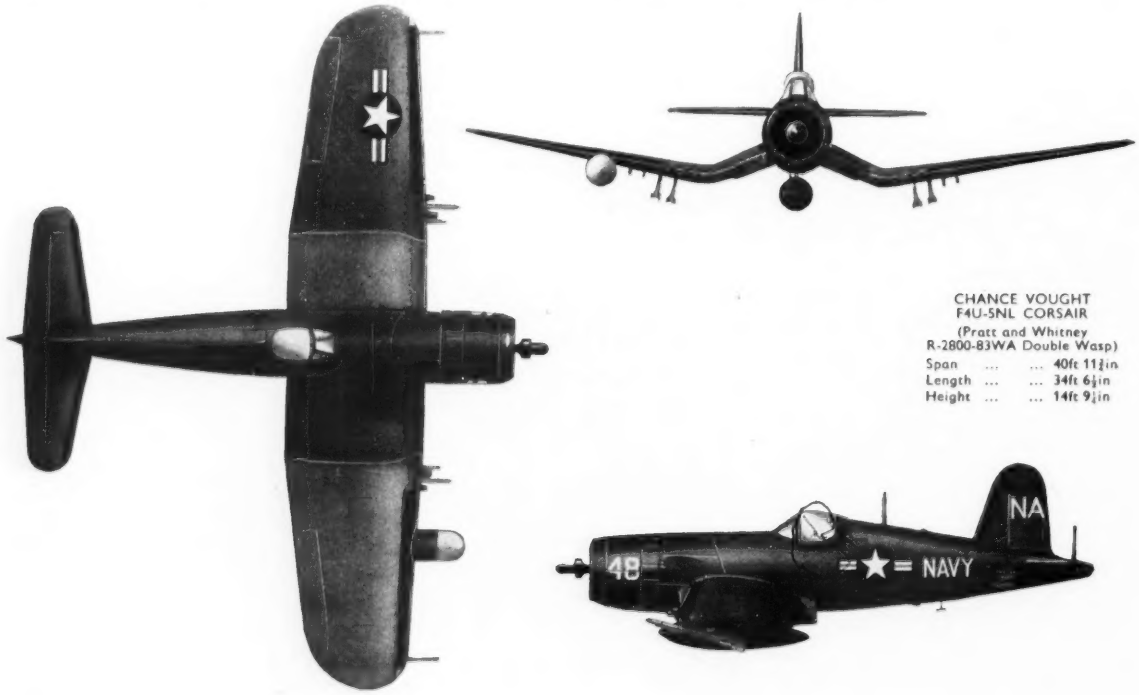
Convair Jet Transport. It appears that the projected subsonic jet transport, which has been the subject of discussion between Capt. Eddie Rickenbacker and the Convair organization, will have a swept wing rather than a delta wing, like the Convair Hustler supersonic bomber.

Martin-built Canberra. The first Martin-built version of the English Electric Canberra, designated B-57A, was airtested on July 20th. These machines are being powered in the main with Wright J65 (Sapphire licence) turbojets, built by the Buick Division of the General Motors Corporation. First production aircraft are classed as night intruder bombers, but later machines will be arranged for training, photographic reconnaissance or radar search. Production is reported to be ahead of schedule.

Holland

Republic RF-84G. A Dutch correspondent reports that a photo-reconnaissance Thunderjet will shortly be delivered to the Royal Netherlands Navy. A variant of the M.D.A.P. straight-wing F-84G, it will have two cameras in the nose, presumably mounted between the bifurcated intake ducts. Four drop tanks will be fitted. In these respects the machine parallels the RF-84F Thunderstreak, which will begin to be supplied to at least five NATO nations in about three months' time.

Sipa 200 Minijet Licence. A licence to build the French Sipa 200 Minijet at Rotterdam has been secured by the former Koolhoven Company, which is now part of the Van Driel and Van Ommeren Machine Factory. In the same works the Dutch T-10 glider is being produced, and a licence for a second French aircraft may later be procured.



CHANCE VOUGHT
F4U-5NL CORSAIR
(Pratt and Whitney
R-2800-83WA Double Wasp)

Span	...	40ft 11⅞in
Length	...	34ft 6½in
Height	...	14ft 9⅛in

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Extract from the Statement by the First Lord of the Admiralty explanatory of the NAVY ESTIMATES, 1953/54.

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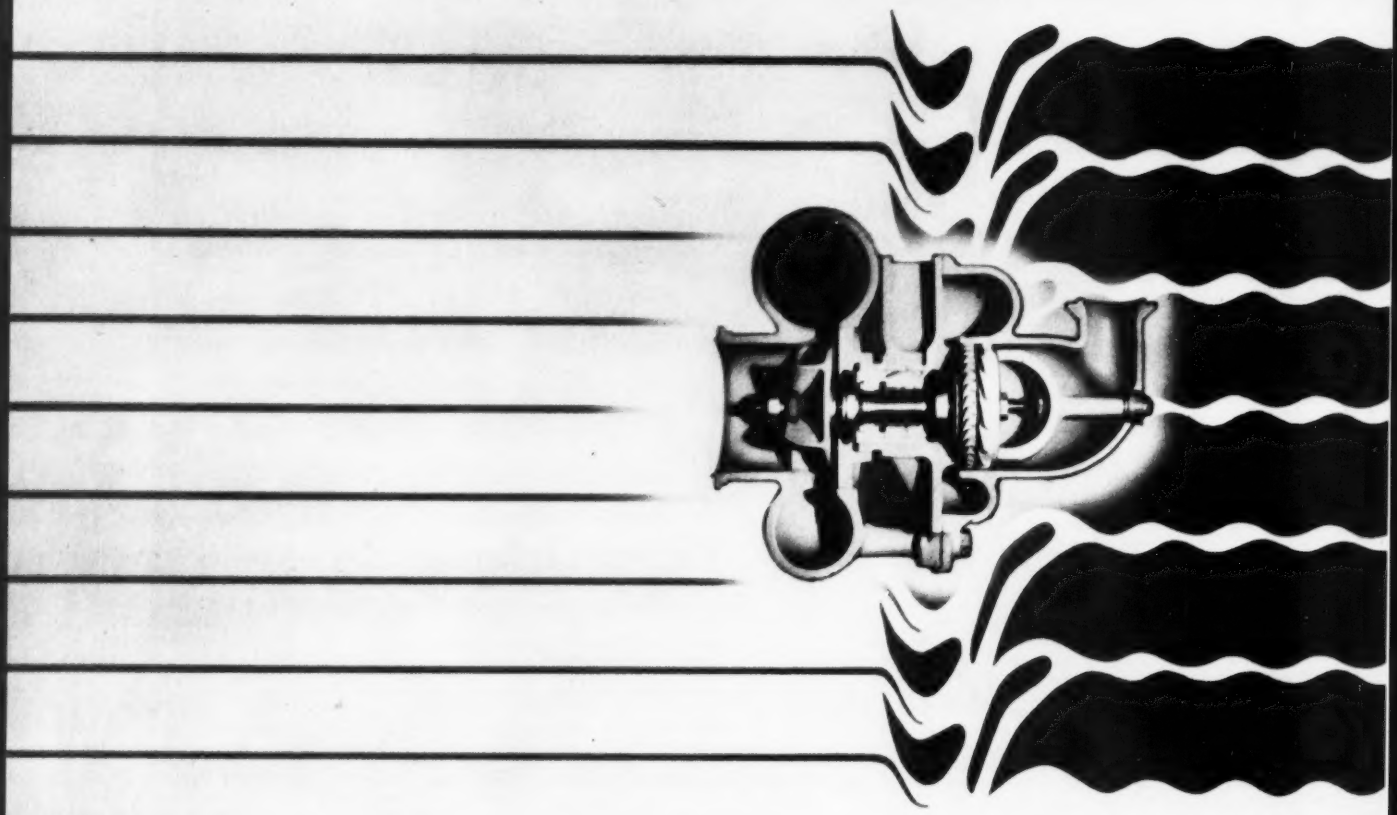

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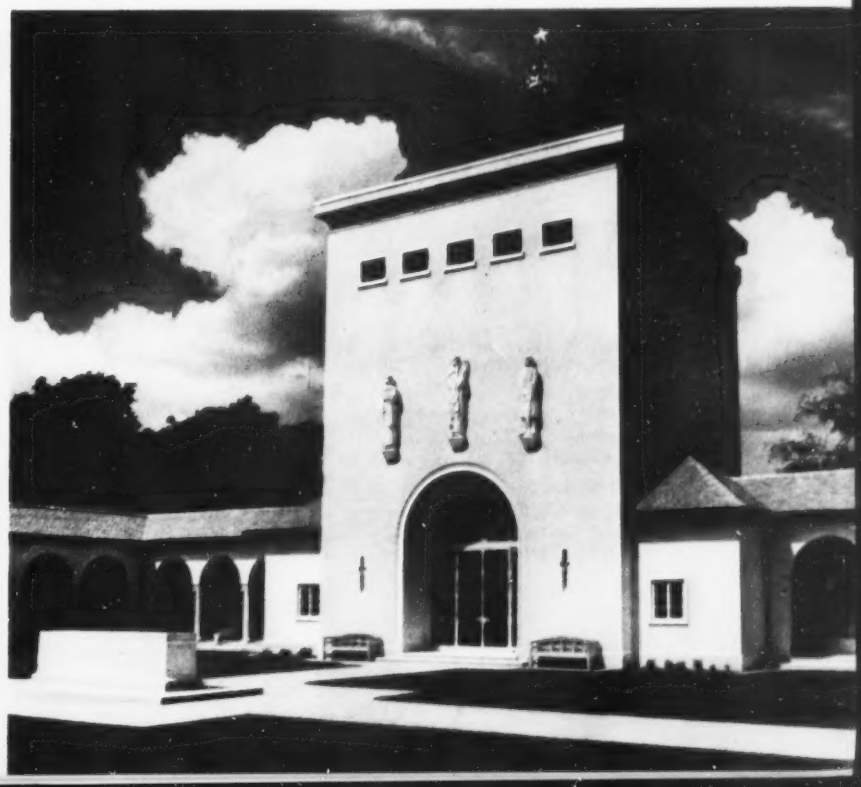
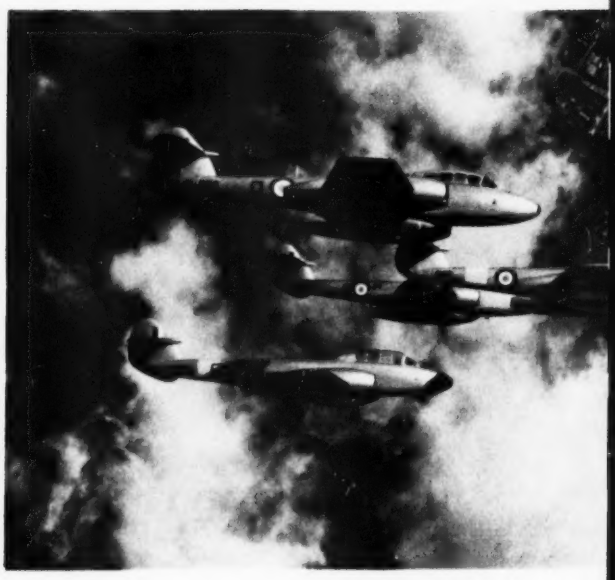
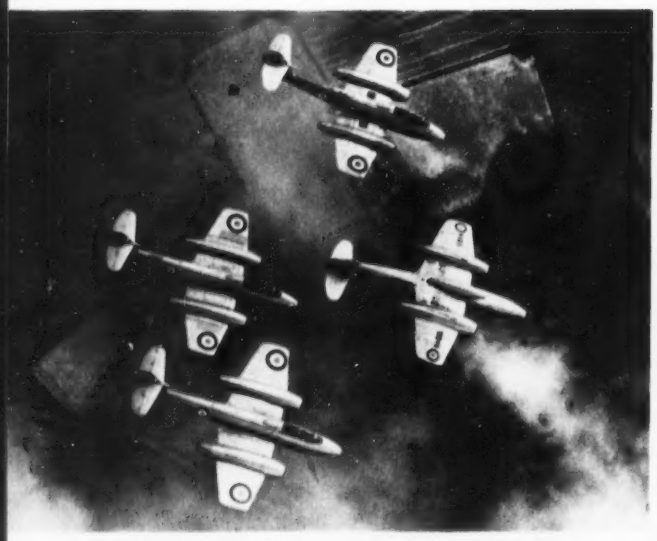
AT THE GOING DOWN OF THE SUN . . .

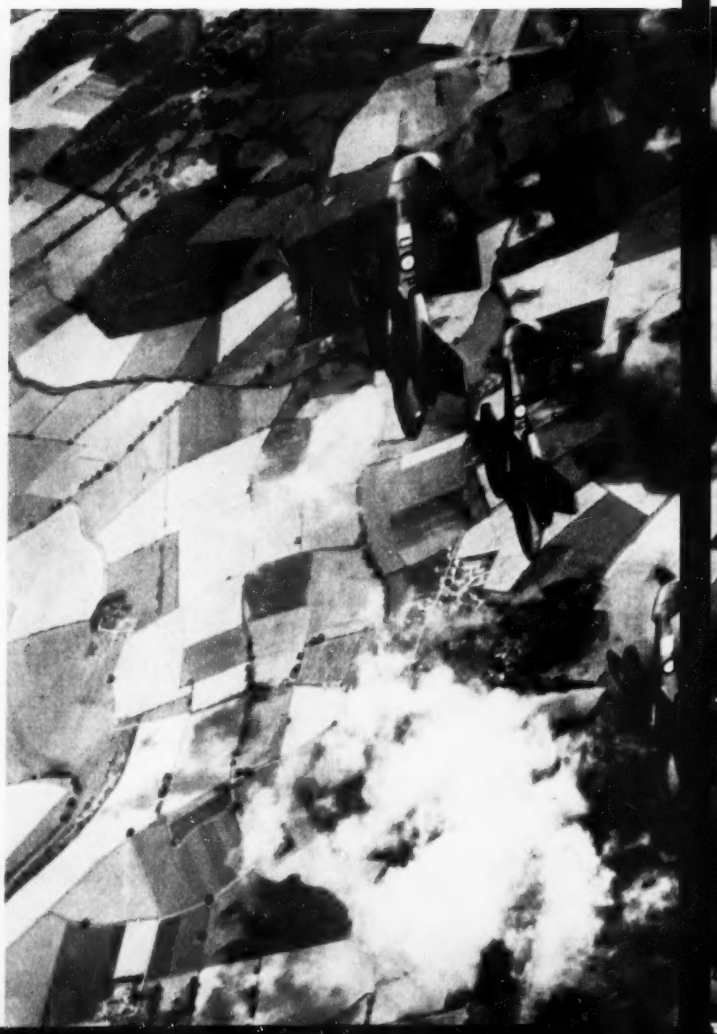
THE Empire Air Forces Memorial at Runnymede, to be unveiled by Her Majesty the Queen on October 17th, forms the subject of these impressive photographs. The memorial is to the memory of officers and men of the Commonwealth Air Forces who lost their lives while operating from the United Kingdom and North-West Europe, and who have no known graves. It stands on a magnificent site overlooking the Thames and consists of a shrine surrounded by a cloister. Among the names of the 20,456 missing which are inscribed on tablets in the reveals of the narrow cloister windows are some which are very famous (as can be seen from the left-hand photograph): also included are those of A.T.A. and B.O.A.C. pilots who gave their lives. The picture underneath, on the left, shows some of the panels bearing thousands of names, and the coats of arms of the Commonwealth countries painted on the ceiling. Below is a view of the Shrine, with the figures of Justice, Victory and Courage, and the turret on the roof surmounted by a star and a crown. Edward Maufe, R.A., was the designer.





"high in the sunli





NEWEST expression of the art of Gloster photographer Russell Adams is this set of exhilarating pictures showing the aerobatic team of the Central Flying School, under the leadership of F/L. Titmuss. There are no finer pilots than those of the C.F.S., five of whom gave a distinguished performance at the recent Jersey Coronation Display and were portrayed in "Flight" of July 31st. Clockwise, from top left, the pictures show a loop, a stall turn, a roll, a second loop, and a formation with the leader inverted.

silence"

The two tanks of insecticide and the spray-bar are clearly visible as a Hiller 360 makes its run over the treetops of the Canton Valais

Entomological War in Switzerland

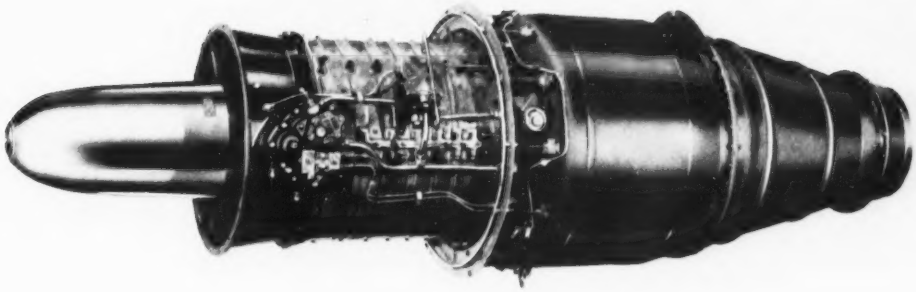
(Left) One of the Auster J.5Gs approaches the operational area; the airfield runways can be seen in the valley. (Above) Melolontha Melolontha—the cause of all the trouble.

REPEATING their expedition against the Swiss maybug in 1950, Pest Control, Ltd., sent a spraying team there again this year. The team was equipped, on this occasion, with both fixed- and rotary-wing aircraft. Instead of the S-51s used in 1950, the latest team brought two Hiller 360s and three Auster J.5G Cirrus Autocars, the latter being flown out from England, while the helicopters were towed over on trailers by their ground tenders. The 700-mile land journey took four days.

The area to be sprayed covered 15,000 acres of wooded country in the Canton of Valais, extending along the Rhine Valley from Sierre, near the Simplon tunnel, to the Lake of Geneva. Heights of ground varied between 1,500ft a.s.l. and 5,000ft, the upper limit being 1,000ft higher than in 1950, because the maybugs were thought to have sought higher ground in order to escape the insecticide. The whole operation was marked by excellent co-operation between the Swiss Government and Pest Control, Ltd., and also with the agricultural section of the cantonal government, who had carried out the previous ground-spraying work in this district.

Flying difficulties were overcome by as much pre-flight briefing as possible, and the pilots first visited the area in order to obtain a mental picture of all the hazards. Very helpful also was the co-operation of the commandant of the team's base at Sim, M. Geizer. As he is one of Switzerland's most experienced light-aircraft pilots, and had made landings and take-offs at 10,000ft on glacier slopes with Piper Super Cubs, he gave pilots the right warnings and meteorological briefing for this valley, which lies

Viper TURBOJET



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ENTOMOLOGICAL WAR IN SWITZERLAND . . . .

between mountains over 10,000ft high and has a climate all its own. Vertical air currents can be considerable, due to the strong sunshine on the rocks, and wind direction varies considerably with height. Sometimes the aerodrome was in still air, while in the spraying area strong turbulence tossed the aircraft around. The wind changed with little warning, and alertness was essential if the maximum of four hours' spraying was to be achieved by each pilot. Another hazard arose from cables, the Swiss being very cable-minded since electricity and transport by cable are cheap; high-tension lines extend up to 6,000-7,000ft and are sometimes 200-300ft above the slope itself. The spraying area is in fact normally prohibited for low-flying. To overcome this difficulty the pilots were supplied with aerial photographs on which all cables were carefully marked, so that any hazards were known beforehand. In addition, red flags were hung on the cables, although these did not show up very well from the air. The cables themselves were very hard to see, even when their position was known, and especially early in the morning when the sun was low and the slopes of the Alps in shadow. Contour flying was used successfully at about 50ft above the trees, at a speed of about 60 m.p.h. for the fixed-wing and 35-40 m.p.h. for the rotary-wing aircraft.

Apart from the main base at Sim two more fields were used, one at Aix-les-Bains, and the other at Chavais, the latter about 350 yards long. Flying from Sim was sometimes difficult, due to the heavy traffic of Swiss Air Force aircraft which were doing an amazing amount of peace-time flying in Vampires, Dewoitines, Harvards and Moranes. At one time local manœuvres with artillery had to be stopped as spraying aircraft were flying in the artillery area.

The Auster J.5G, fitted with the very efficient spray gear developed by Pest Control, Ltd., had a sufficiently good take-off and ceiling fully loaded to carry out all the duties required of it. The aircraft made a good impression on the Swiss who concentrate almost entirely on American light aircraft. No difficulties were encountered with the spraying pilots' greatest enemy, the bird, and hardly any were seen; it was their absence, in fact, which had caused the maybug to multiply so tremendously during the last three years.

A central office in Sim dealt with all reports of maybugs from the different *communes*, and infested areas were marked on pilots' maps, so that next morning the killing D.D.T. emulsion was sprayed as the insects emerged from the ground, and the leaves were coated with crystals which could kill by contact up to 14 days after treatment. Results were really impressive, and a few hours after treatment the dead bugs began dropping from the trees, until the Alpine roads were blackened with the bodies of millions of dying insects.

Flying crop-spraying aircraft in the Alps has some psychological problems, but, once these are overcome, it can become a fine art offering the reward of an ever-changing backcloth of mountain scenery.

An ample reserve of power (often a critical factor) and sufficient air speed formed the basis of safe flying. A reconnaissance from a safe height before entering a valley to spray, and a plan of the runs in and out had to be made beforehand, from the air, as the maps gave no definite guidance; this, combined with a pre-flight survey on the ground, avoided risks. Difficulty was experienced with constantly changing air currents as it was impossible to detect them without vertical speed indicators; a drop in air speed without a change in attitude, however, gave some warning of a down current. Spraying runs along slopes of 70-80 deg needed some practice because of the proximity of the rotor- or wing-tips to the slope, and good cockpit visibility was of primary importance. Turning towards the mountainside also needed practice, as distances were sometimes deceptive. The helicopter, when it has sufficient power to climb vertically at full load at altitude, is the ideal machine for contour flying in such regions as this; and it is not restricted by a minimum turning radius or the need for constant forward speed.

Where fields and cables end, the steep wooded slopes begin: agility is a prerequisite for operations in this type of terrain.

Flying was carried out very early in the morning, when the air was ideal for spraying, and late in the afternoon when midday turbulence died down. Some spraying down the slopes was tried, but available flap-area was insufficient to prevent the air speed building up when following the slope down with closed throttle. Markers were not generally used, only the heavily infested areas being marked by people holding white flags, and in such a spot one helicopter pilot reported the rare instance of a spraying pilot being able to see his quarry blackening the trees below.

Each day an average of 1,800 to 2,000 acres was covered, and apart from the fact that the areas were large and mostly not sprayable from the ground, the difficult slopes tackled were most impressive. Close collaboration between entomologists and pilots successfully defeated the menace of the maybug. Apart from the entomological success, however, the expedition was also remarkable as being the first in which fixed-wing aircraft were successfully employed for spraying in the Alps. Farmers in this rich and lovely Rhine valley can now look forward to a safe harvest for another two years, as the soil is free of the larvae which fed on the roots of their crops.

J.M.H.H.

(Below, left) An Auster and the two Hillers are prepared for operations. The Austers were flown out to Switzerland but the Hillers have only just been unwrapped from the shrouds in which they were carried out by the ground convoy (right).

THE GLIDING CHAMPIONSHIPS

Final Stages of the National Contests at Great Hucklow

IN this report, Alan Yates (himself a contestant) describes the progress of the competitors in the final five days of the nine-day championship meeting at Camphill Farm, Great Hucklow, Derbyshire. In our "stop-press" announcement of the results last week, incidentally, the placing of the London Gliding Club as second in the Team Class was omitted —not through any fault of our contributor; final results are on p. 204.

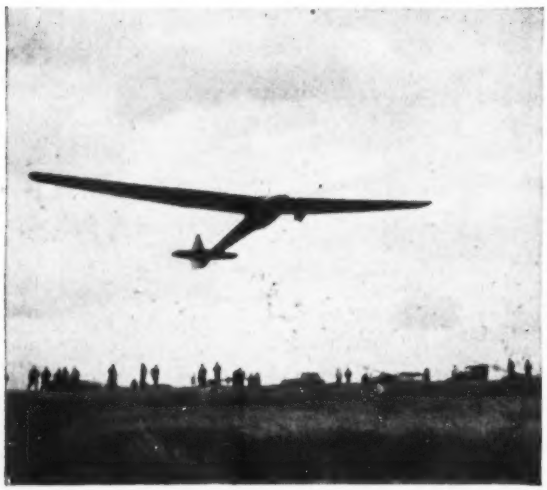
OF the first four days of the Championships only the first could be described as having offered good gliding weather. On that Sunday, July 26th, sufficient sunshine reached the ground to produce the kind of cumulus cloud that glider pilots like. Even so, the tendency of the clouds to flatten and spread across the sky, cutting off the sunshine, was already manifest. Many competitors nevertheless covered over seventy miles. The next three days (the Monday, Tuesday and Wednesday) were spoilt by this tendency to over-development of the clouds. In the middle hours of each day the cloud-cover made thermals very rare. The pilots, fortunately able to use the westerly wind and the soaring slope to stay airborne, had the choice of flying away in very poor conditions or waiting for a sunny patch which might never come. Some were able to climb high enough to fly blind in the larger clouds and two reached over 15,000ft above sea level. The longest flights on these days were 70, 73 and 36 miles, but the majority of pilots were forced down after a dozen miles or so.

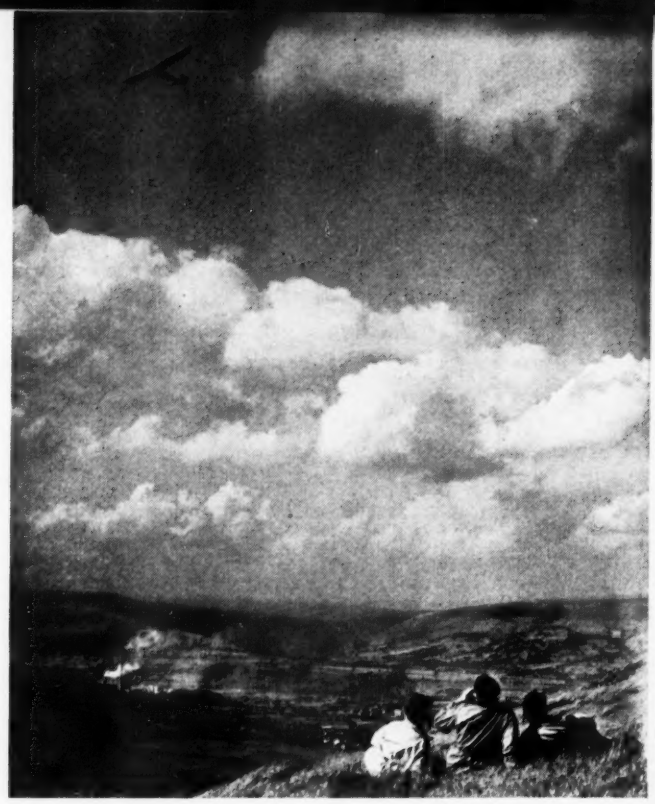
Thursday, July 30th.—The day began in a now-familiar manner with clouds building up rapidly by 9 a.m. and threatening to cut off all sunshine during the middle hours; nevertheless, the met. forecaster thought that conditions would be better than those of recent days. The task was a flight to a goal chosen by the competitor, so that the 20 kt wind forecast of 300 deg-310 deg tempted many to declare goals as far away as Cambridge and Manston.

Previous experience had shown that early escape from the hills would be necessary if long distances were to be flown. Several competitors struggled off under overcast skies before lunch but were soon down—Wills after 16 miles, Stephenson after 17 miles. Many of these pilots were hastily retrieved by their ground crews and launched again to join other hill-soaring pilots who had scarcely missed them.

By two o'clock the cloudy weather made the distant tasks remote chances and several pilots landed to declare new and nearer goals and took off again. At three o'clock, however, the sunshine won, and for an hour conditions were good enough for most pilots to get away. By this time many had been airborne for four hours, flying in very trying conditions. Imagine twenty-odd aircraft flying at random between 0 and 2,000 feet above an area the size of an average aerodrome, all seeking the same small thermals and all rushing to join any pilot who appeared to be climbing. Many pilots were already exhausted when the better conditions arrived. Nevertheless, 37 cross-country flights were made, the longest by Godfrey Lee of the London Gliding Club, flying the Club's Olympia.

Geoffrey Stephenson, the Individual winner, is winched off in his Sky.





This photograph admirably expresses the spacious feeling of the Great Hucklow site. It was taken as competitors sought height for the race to Boston, the task set on July 28th.

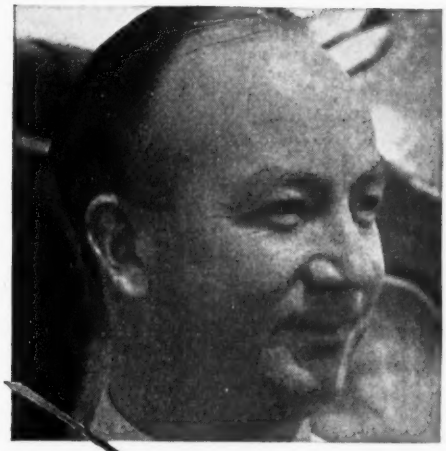
Lee—who as assistant chief designer at Handley Page's is often preoccupied with fast aircraft—covered the 105 miles to his goal at Marham, Norfolk, in 7 hr 50 min. To sit in a tiny cockpit for the duration of a normal Atlantic air crossing, while working hard at the controls and constantly reading instruments and maps, is a great feat of endurance. Over the site, which is 1,300ft above sea level, Lee soared from 10.36 a.m. until just after 3 p.m., when he was able to reach cloud-base for the first time. He flew back upwind to test another cloud and, finding lift under this one too, set off towards his goal.

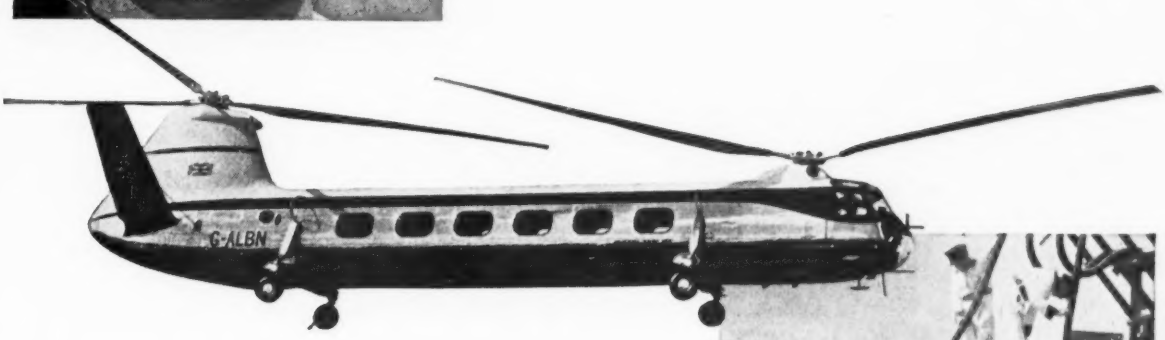
Fifteen miles out, Lee was down to the level of his start and saw several other gliders in a similar plight. The clouds looked better to the north of the track and near Worksop the Olympia reached cloud-base at 4,700ft a.s.l., but was beaten into cloud by a rival, the R.A.F. Gull IV from Cosford. Believing that one sailplane per cloud is a sound rule, he left this as his highest point of the day and, in a series of weak thermals, reached Spalding and the Wash. Around King's Lynn no thermals appeared and during the remaining long, downwind glide calculations were made to decide if Marham could be reached. It was with relief that the great Marham runway appeared directly ahead and, arriving with 1,500ft in hand, Lee was welcomed with a green signal, food and drink. The excellence of this flight is emphasized by the failure of Stephenson and Wills to exceed 17 miles.

The daily prize for the highest average speed from take-off to landing at a declared goal went to A. H. Warminger (Olympia), of Norwich, who reached Newton at 27.2 m.p.h. As a result of five day's flying the leaders in the Individual Class were still Stephenson, Smith and Deane-Drummond; in the Team Class they were the Empire Test Pilots' School, Yates and Nixon, and the 2nd T.A.F. R.A.F. team.

Friday, July 31st, was declared a rest day. The wind made hill-soaring impossible and it was thought that convection would be weak. Few competitors flew, although a member of the local club showed the pundits how to do it by covering 77 miles on thermals on his first cross-country flight.

Saturday, August 1st. — For the last three days of the Championship Bank Holiday crowds were expected at Great





The aeroplane

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The pilot

At 32 Mr. C. T. D. Hosegood is Chief Helicopter Pilot to the Bristol Aeroplane Company, which he joined after flying catapult aircraft for the Royal Navy and helicopters for the R.A.F. Has piloted " Bristol " helicopters at flying displays and earned applause by landing a Mark 3 machine in the Place des Invalides for the 1951 Paris Aero Show. Considers the " Bristol " Type 173 his special baby, having practically weaned it from birth. Of the Shell and BP Aviation Service he says " In the hover game you're not long in the air, but you need a service like this. Recommend it any time! "

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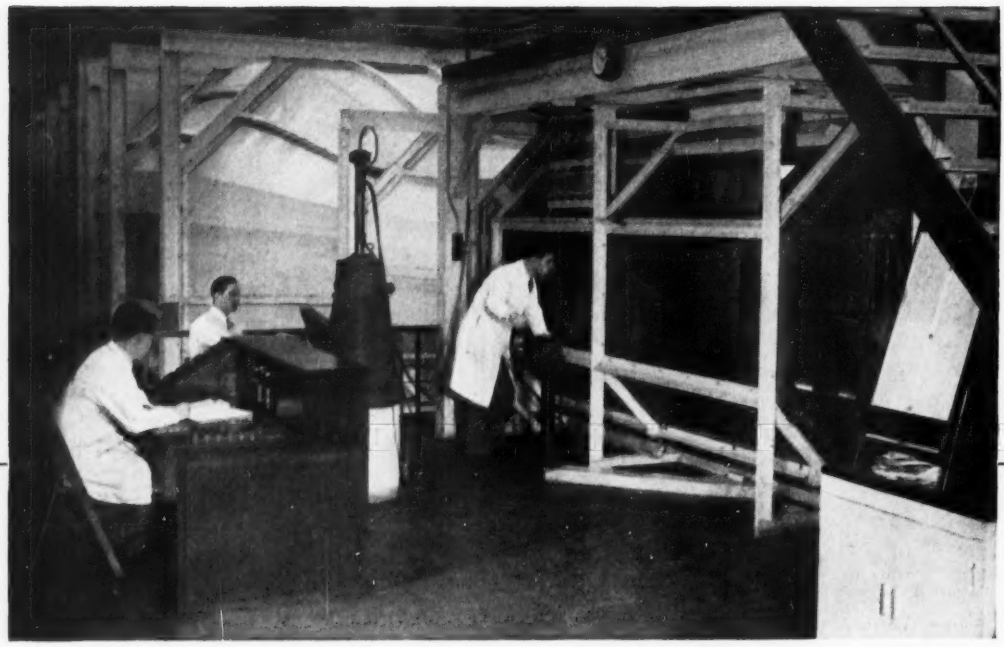
Wind-tunnel drives



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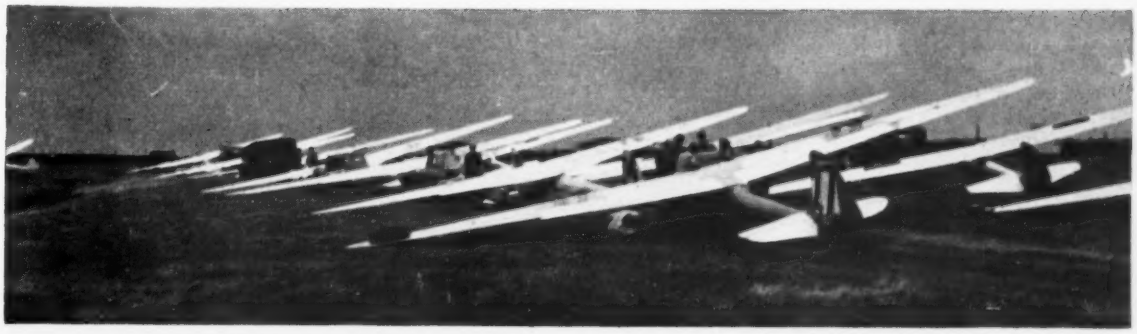


Queue for a launch: a typical at the start of each day's contests; nearest the camera is Prof. G. C. Varley's Olympia. (Right) Dan Smith (on right), runner-up to Stephenson, waits with a friend beside his Olympia. (Centre) Beverley Shenstone, B.E.A.'s chief engineer, chats with Eric Taylor, assistant clerk of the course.

THE GLIDING CHAMPIONSHIPS . . .

Hucklow. The organizers advised that all trailers be parked away from the site to avoid the congested local roads, and set as the first daily task a race to Rearsby and back, one hundred miles in all; successful pilots would not then have need of their trailers and the visitors would be able to see the finish. The weather forecaster, giving a wind of 14 kt from 280 deg said that the outward journey should not be too difficult but that the homeward leg might prove troublesome.

The hill was again soarable and soon twenty gliders were manœuvring to climb in a thermal and cross the starting-line just downwind of the gliding field. Those who got away early found the clouds were again building up too rapidly for good thermal conditions but several gliders were reported to have been seen at Rearsby. The pilots were expected to note the letter being displayed by a ground observer in the lee of a hangar. This was changed frequently, so that the reporting of the correct letter and time served as a good check that the pilot had rounded the turning point—even if 5,000 ft above it.

A very long time elapsed before the first pilots approached the finishing line. By tea-time the clouds had mostly cleared and thermals were weak. The homeward-bound pilots were gaining height by circling in thermals which, in a strengthened wind, were being carried away from the finishing line at about 20 kt.

The intermediate straight glides into wind scarcely made up for the ground lost. In this way Philip Wills took 4½ hours to fly 50 miles against the wind. He was seen circling near Froggett Edge and then was lost to view as he set the nose of his blue Sky sailplane toward the finishing line. He reached the landing field after a well-judged run-in of about five miles with 200 ft in hand.

Wills was the only finisher; Stephenson landed 3½ miles short, while Foster, flying an Olympia with poorer powers of penetration against the wind, took four-and-a-half hours to cover 35 miles of the return journey to Matlock. Several gliders had reached the turning point and battled their way a few miles back—including *Bluebell*, the Cambridge University two-seater Sedbergh. The daily prize awarded to the pilot completing the course at the slowest speed also went to Philip Wills!

The leading positions were now:—

Individual Class.—Stephenson, 423; Smith 347; Wills, 309; Foster, 300.

Team Class.—Empire Test Pilot's School, 287; Yates and Nixon, 242; Dorman and Morison, 225.

Sunday, August 2nd.—On this day another speed test was announced—a triangular course of 63 miles starting from the

(Right) The prototype Slingsby Skylark, flown by Lt.-Col. A. J. Deane-Drummond, takes the air. (Below) Geoffrey Nixon, Alan Yates and Doreen Yates discuss the day's route. (Below, right) Willing hands for Yates's Olympia after a landing near Matlock.

"Wave" clouds and cumulus seen from Great Hucklow.

THE GLIDING CHAMPIONSHIPS . . .

chimney of the local cement-works and turning at Bolsover Castle and Ashbourne Aerodrome. The day was sunny and warm early on, and good thermals were expected. The 15 kt north-westerly wind seemed unlikely to worry the pilots seriously until the third leg, and launching began at 11 a.m. The wind was fickle and several pilots were unable to remain airborne—the lucky ones landed on the airfield, which is on the top of the soaring ridge, while others left a decision too late and descended to a field-landing at the bottom and a trailer retrieve.

The first leg, which should have been an easy downwind twenty miles, proved difficult to many because of the heavy clouds near Chesterfield. Several pilots gratefully accepted cloud-lift, which took them to 9,000ft a.s.l.—enough height to spot the recognition letter at Bolsover with several thousand feet in hand to begin the second, crosswind leg. The heavy black clouds over Bolsover, together with the industrial smoke, made the Castle almost invisible and many thousands of feet of valuable height were lost by pilots circling in the murk. Several gliders landed nearby and the cream Olympia of Imperial College G.C. hit some power wires on the approach and was badly damaged, although the pilot escaped injury. Others were circling desperately in the weak thermals from smouldering slag heaps to gain enough height to cross the hills around Matlock. Only Wills and Bisgood (Sky) and Foster and Cotton (Olympia) completed the second leg to Ashbourne; and, after losing his way, Bisgood managed to return to base, his Sky being the only finisher. Foster almost finished the course and moved up into second place in the Individual Class. Bisgood and his Empire Test Pilots' School colleagues made certain of winning the Team competition by establishing a lead of 101 points.

Monday, August 3rd.—For the final task a flight towards the English Channel at Lympne was set. Many pilots named Lympne (193 miles) as goal since a 300 km goal-flight is one of the qualifications for the international Diamond Badge.

Thermals were good from the first launch at eleven o'clock, and half an hour later several pilots were flying from cloud to cloud over Chatsworth House and Matlock and on course to Derby and Leicester. Those who left early found the familiar rapid cloud-development to over 9,000ft a.s.l. The tops soon spread out into stratocumulus cloud and at midday the Derby-Leicester area had a 6/8th cloud cover. With the aid of a last thermal from the Corby ironworks, Yates reached Bedfordshire as early as two o'clock but the almost complete cloud-cover then ended thermals. An hour later the clouds had almost dispersed and thermals were more abundant, so that Foster, whose first attempt had ended after 17 miles, was able to fly to Buntingford (116 miles) from a take-off as late as 3.30 p.m.

The most successful pilots were able to keep in the sunshine by flying to the east of track. Dan Smith reached Colchester, Philip Wills and Charles Ellis (the latter in the London Club's Olympia) reached Southend; but only Geoffrey Stephenson crossed the Thames, to complete a brilliant flight to Lympne.

RESULTS

The final results (provisional) of the 1953 Championships were:

Individual Class

		Points
1.	Geoffrey Stephenson (Sky)	551
2.	Dan Smith (Olympia)	454
3.	Philip Wills (Sky)	452
4.	Frank Foster (Olympia)	451
5.	Tony Deane-Drummond (Skylark)	311

Team Class

		Points
1.	Empire Test Pilots' School (Sky)	414
2.	Charles Ellis and Godfrey Lee, London Gliding Club (Olympia)	351
3.	Alan Yates and Geoffrey Nixon (Olympia)	336
4.	Charles Dorman and Stewart Morison (Olympia)	288
5.	2nd T.A.F. Gliding Clubs, Cpls. McKerchner and Brennan (Weihe)	267

AWARDS

Stephenson receives the Londonderry Cup and the E.T.P.S. Team the L. Du Garde Peach Trophy. The Kemsley Cup, for the best club team, goes to the London Gliding Club, whose Olympia was flown by Lee and Ellis. The Firth-Vickers Trophy for the best performance by a British Pilot in a British designed and built glider also goes to Stephenson. Dan Smith receives the EON cup for the best performance in an Olympia, while the two new trophies for two-seaters, the Furlong Trophy (greatest number of points) and the Slingsby Trophy (most meritorious flight) are likely both to go to the A.T.C. Sedbergh flown by F/L. A. D. Piggott and F/O. E. J. Meddings.

Reflections on the Championship

The weather provided difficult gliding conditions, but soaring was possible every day. The organization, as expected, was first-class and no untoward incidents occurred.

In a sport in which the element of luck is ever present the results show no surprises. The three members of the 1952 British team are in the first four in the Individual Championship. London Gliding Club had an exceptionally successful meeting: the first four in the Individual Class and the second and third teams are all members of the Dunstable club.

The Slingsby Sky is once again at the top of the lists and the new prototype Skylark performed well. The bulky two-seater Sedberghs did rather better on the days when downwind flights were ordered, but showed that the A.T.C. is now determined to turn "gliding" into "soaring." All voted the 1953 meeting a satisfactory and enjoyable one. A.H.Y.

DITCHING OF AN RB-36

THE larger the aircraft, the greater the drama if it meets with an accident. This was particularly the case when news of an accident to a RB-36 found its way into the disaster-conscious pages of the daily Press last week. During the night of August 4th-5th a Convair RB-36 *en route* from the United States to Lakenheath, Norfolk, came down in the Atlantic north-west of Ireland. It was carrying a crew of 23, some of whom baled out before the aircraft hit the sea.

When distress messages from the aircraft were intercepted by several ground stations and aircraft before the crash, one of the greatest air-sea rescue operations ever mounted was immediately begun. Ships were diverted and rescue aircraft of the U.S.A.F. and the R.A.F. sent out from Ireland, England, Scotland and Iceland. SB-29s, Lancasters, Hastings and Albatross amphibians searched the area and found wreckage and survivors. Airborne lifeboats were dropped, and some survivors seen to board them. But the Albatrosses were unable to land nearby because of a heavy swell and the weather began to close in, making further air search impossible.

Ships, which had now reached the area, picked up nine members of the crew, four of them alive, and continued the search. Their task, however, was probably made inordinately difficult by the weather, and by the fact that the RB-36's crew appears to have become badly scattered in abandoning the aircraft, and to have had little opportunity of making full and proper use of the survival equipment which must have been available to them.

The incident has, however, very clearly illustrated the great variety and number of rescue facilities which can now be quickly marshalled for an area so far out in the Atlantic. It appears, however, that the greatest difficulty met by the rescuing aircraft and ships was in the lack of precise position reports and clear information on the intentions of the crew of the RB-36. Some 36 hours after the accident it was still not completely clear what had happened to the crew members, and the wings of the RB-36 were apparently found still floating several hours after the crash, a considerable distance away from the survivors up till then located. By Friday, hope of further survivors was fading.

CORRESPONDENCE

The Editor of "Flight" does not hold himself responsible for the views expressed by correspondents in these columns; the names and addresses of the writers, not necessarily for publication, must in all cases accompany letters.

The S.E.5

I WAS enormously interested in the article on the S.E.5 in *Flight* of July 17th, and feel I must write to congratulate J. M. Bruce upon it.

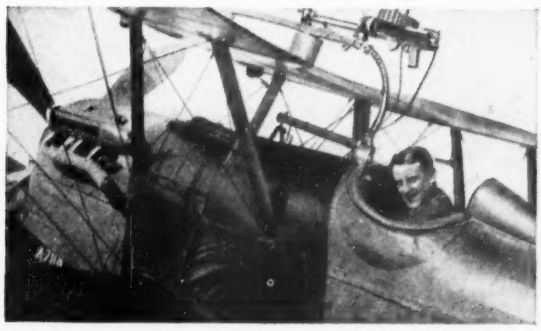
When I was posted to No. 56 Squadron at London Colney I had done seven hours' solo and Major Blomfield was furious with the Air Ministry for posting a brand new inexperienced pilot to his crack squadron, full of chaps with lots of experience like Albert Ball, and specially chosen to fly the new super fighter, the S.E.5.

However, after a few days, when the flight commanders were asked to choose the pilots for their flights, Captain Ball said: "I'll have that chap with the Scottish bonnet." This was luckily me, because I was wearing my Lovat Scouts bonnet; I had served at Suvla Bay, Gallipoli, with the Lovat Scouts, which regiment my uncle had raised in the Boer War.

I was not going to take any chances in flying one of our only twelve S.E.5s as one bad landing and I would have been back on R.E.8s; so the first time I flew one was when the whole squadron flew out to France in formation, and my first landing was in France. I got it down all right and, as mentioned in your article, I did my first patrol with Ball on April 22nd, 1917. A few weeks afterwards, I was with him when he was killed and I then became flight commander of "A" flight. McCudden and Bowman were the other flight commanders.

I am amazed at the complete accuracy of the article, and I cannot think how all that information was obtained. I knew nothing about the early marks of S.E.s but I did know a good deal about the S.E.5 and I could not find a single error, except that the S.E.5A never had a service ceiling of 23,000ft. McCudden had special high-compression pistons fitted to his machine and it was this that enabled it to get to about 19,000ft, but I never heard of any S.E. getting higher than that. Also, we had no oxygen and even at 19,000 it was getting pretty tricky. I used to spend a good deal of time at over 18,000ft, and it gave one pretty bad headaches.

As stated in the article, when we got to France we spent several weeks practically rebuilding the aircraft, taking off the greenhouse, raising the top Lewis gun to converge on the Vickers at 50 yards range, etc. What seems incredible in these days, however, is that all this was left to the different flights. Some put extra wires on the fins, some thought the wings were not strong enough and fitted extra drift-wires from the struts back to the engine, etc.



The writer of this letter in an S.E.5A.

We did not like the long exhaust-pipes so we cut them off near the engine and welded short bits sticking out at an angle. Afterwards we went back to long pipes, because we thought it might lessen the danger from fire if the tank was hit.

I think it says a lot for the machine that in those years 1917 to 1918 such huge progress was being made in design that the aeroplane that was outstanding in the spring of 1917 was still the most popular with the pilots at the end of the war in 1918. I suppose the Sopwith Snipe had quite a bit better performance, but it did not have much chance to do anything before the war was over.

Alresford, Hants. GERALD C. MAXWELL.

[The above are extracts, printed with the writer's permission, from a personal letter ("not with the idea of shooting a line, but simply because of my admiration for the aircraft and for the chaps who flew it") addressed to J. M. Bruce.—ED.]

Helicopter Rescue

I READ with interest on page 134 in Flight of July 31st, your paragraph of the Culdrose helicopter rescue. As an eye-witness of this event, I was able to photograph the rescue.

I must disagree with you when you say that the doctor was winched down on to the rock; in actual fact, he leapt to it whilst the pilot held the helicopter some four or five feet off the ground.

Approach to the rescue: Mr. Nicholl's snapshot.

The same procedure was adopted when the doctor returned into the aircraft; the only winching which took place was the actual rescuing of the patient. This, I might add, was carried out with great skill, a very strong wind off the sea no doubt causing some very nasty air currents round rocks which towered above.

London, S.E.7. J. NICHOLLS.

Indoor Supersonic Bangs?

THE sound-barrier is crossed many times these days (Neville Duke told me at Soesterberg that he had done it more than 70 times!) and the famous supersonic bangs have been heard by hundreds of thousands of people. Still, however, these bangs hold a lot of mystery.

I should like to know whether it would be possible to create supersonic bangs in a wind tunnel when a supersonic flow is passed over the wing of an aircraft model. If so, would it be dangerous for the wind tunnel?

Boskoop, Holland. HUGO HOOFTMAN.

New Types and Security

I MUST object to the implication carried in the two items on your "Aircraft Intelligence" page, July 24th, that the magazine *Aviation Week* violated British security regulations in mentioning the existence of the Hawker Delta project and Short Bros.' forthcoming long-range patrol aircraft.

Both these projects have been mentioned on more than one occasion in a British publication well before any acknowledgment appeared in *Aviation Week*. I personally took the matter up with the relevant security officer before passing any information to New York.

So far from "British security officers will be interested to learn . . ." (as you say), the fact of the matter is that the relevant officer was made aware of our intentions beforehand and acknowledged that such action is inevitable once the cat is out of the bag. I needn't point out that security officers do not confirm the accuracy of such information, only giving permission to mention the subject-matter concerned.

As the only American air correspondent stationed permanently in the U.K., I am most anxious to avoid any misunderstanding on this point. This office has been scrupulously careful to observe the letter of British security regulations in order not to abuse the hospitality of the industry.

NAT MCKITTERICK,
London Correspondent,
Aviation Week.

London, E.C.4.

IN BRIEF

A. Cdre. A. D. Selway, Commandant of the Central Flying School, writes to give some additional information on the collection of "Wings of the World" which he presented to the School and which we illustrated last week. The wings were mounted, he says, by A. E. Skinner and Co., of Old Bond Street, London; and the R.F.C. wings in the top left-hand corner of the photograph were presented by S/L A. E. L. Skinner, M.C., who wore them in World War I.

THE INDUSTRY

English Electric and Canadian Marconi

WITH the approval of H.M. Governments in the United Kingdom and Canada, the English Electric Co., Ltd., has agreed to buy from Cable and Wireless, Ltd., the latter interest, amounting to 50.6 per cent of the share capital, in the Canadian Marconi Company. As a result of this transaction, Marconi's, who are a wholly owned subsidiary of English Electric, will be reunited through their common parent company with the Canadian firm, which Marconi's founded just over fifty years ago as one of its overseas subsidiary companies, and to which it granted its research, manufacturing, patent and selling rights in Canada

New British Standards

THE British Standards Institution has published two specifications covering the fittings, requirements and coding for aircraft swaged cable-end assemblies on pre-formed steel wire rope complying with B.S. W.9 and W.11. The fittings comprising the assemblies, and turnbarrels and tension rods for use with them, are those covered by British Standards already included in the aircraft series, namely, SP.33 to 39 and SP.49 to 52. The specification numbers and titles of the two assembly codes are : SP.53—Swaged cable-end assemblies (B.A. and B.S.F. threads) for pre-formed steel wire rope for aircraft; SP.54—Swaged cable-end assemblies (B.A. and B.S.F. threads) for pre-formed non-corrodible steel wire rope for aircraft.

Copies may be obtained from the British Standards Institution, Sales Branch, 24, Victoria Street, London, S.W.1, price 6s. and 3s. respectively.

Also recently published are standards specifying the materials, dimensions and finish of double coil spring washers for aircraft, suitable for use with bolts and nuts with B.A. and B.S.F. or U.N.F. threads. Copies, contained in one publication, SP.55 and SP.56, *Double coil spring washers for aircraft*, are priced at 1s. each.

Goodyear Aviation Earns Dollars

ORDERS totalling $3,000,000 have been placed with the Goodyear Tyre and Rubber Co. for tyres, wheels, brakes and associated spare parts; they will be used for American aircraft operating from Europe.

The brakes will be of the Goodyear-designed single-disc type and will be made, together with the wheels, at the new Goodyear Aviation Products factory at Wallasey. The tyres and tubes will be manufactured at the company's factory in Wolverhampton. The Goodyear factory in Luxembourg will also be engaged on the manufacture of tyres for U.S. aircraft based in Europe.

MR. FRANK PIASECKI, of helicopter fame, seated in the Bristol 171 at Filton. Alongside are Mr. Raoul Hafner and Mr. C. T. D. Hosegood, who are helicopter chief designer and test pilot respectively.

Other Goodyear news is that Mr. H. N. Harben, who has been at the Wolverhampton factory since 1947, in the capacity of sales engineer in the company's aviation department, has now relinquished this appointment in order to initiate a private venture. Mr. Harben is establishing an engineering business—at Standeford, near Wolverhampton—which will specialize in development and prototype work.

IN BRIEF

Wild-Barfield Electric Furnaces, Ltd., are again organizing tours of their works, from October to May, for senior students of technical colleges and similar institutions, and early application should be made for dates. Details are obtainable from Elecfurn Works, Watford By-pass, Watford, Herts.

* * *

Problem in Four Dimensions is the title of an attractively produced booklet lately published by the English Electric Co., Ltd., and reviewing and illustrating the part played by the associated companies—which include Napier's and Marconi's—in aviation past and present.

Ekco Electronics Appointment

Lord Waleran, who has been appointed a director of Ekco Electronics, Ltd., Southend-on-Sea, the recently formed subsidiary company of E.K. Cole, Ltd. Well-known for his activities in the aeronautical and automobile industries, Lord Waleran was formerly commercial manager of the Ekco electronics division. The new company has been formed to handle production, marketing, installation and maintenance of electronic and nuclear equipment.

From Rotol, Ltd., Gloucester, comes a handsomely illustrated brochure describing the courses available at the Rotol British Messier apprentice training school.

* * *

Mr. Charles Gardner, formerly B.B.C. air correspondent, and recently appointed assistant to Mr. George Edwards, chief designer and general manager of Vickers-Armstrongs, Ltd., aircraft division, is now installed at the company's Weybridge works (Byfleet 240, extn. 216).

* * *

A new two-cell focusing torch introduced by the General Electric Co., Ltd., is stated to be equally suitable for use in the home, in the office or in the factory. Designed for ease of service, it incorporates a detachable switch with safe, flash and fixed light positions, while the bulb-mounting assembly is easily removed.

* * *

The award of the English Electric Research Fellowship in Aeronautics for the academic year 1953-1954 at the College of Aeronautics has been made to Mr. R. G. Anderson, of Ashton, Preston, Lancs. He is a member of the staff of the mathematical section of the English Electric Co.'s aircraft division at Warton Aerodrome, Preston.

* * *

The name of Structural and Mechanical Development Engineers, Ltd. (2, Buckingham Avenue, Slough, Bucks), has been changed to S.M.D. Engineers, Ltd. The construction company of the Almin Group (parent company, Almin, Ltd., Farnham Royal, Bucks), S.M.D. specialize in aluminium construction and prefabrication. Recent contracts include the world's first all-aluminium aircraft hangars, erected at London Airport, and the 217ft clear-span aluminium hangar for Comets at Hatfield.

Landscapes in Oils (5)

Fawley-Purfleet, Purfleet-Fawley

BY BERNARD HOLLOWOOD

Few journalists can resist the temptation to bolster their literary efforts by quoting snatches of poetry : so when the good ship *Esso Appalachee* hove in sight I immediately turned to my collaborator (artist " Wren ") and murmured a few lines from the popular anthologies.

I referred to hearts of oaks, dirty British coasters, ships that pass in the night, salt-caked smoke-stacks, painted ships on painted oceans, and shipmates o' mine. And as I quoted I developed a slight list to starboard and misty look in the eyes.

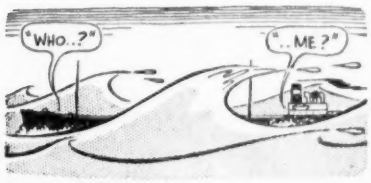
Without a moment's hesitation it was pointed out to me that the *Esso Appalachee* was no heart of oak, far from idle and as clean as a Dutch Interior. There are some people, you see, to whom hard facts are more important than emotions, more important than the felicitous, evocative rhythm of a masterful pen.

" At least," I said, with some show of petulance, " you will grant me that the smoke-stack is salt-caked."

"We can make a salinity test, if you like," they said, "when she ties up. . . . "

"...salty smokestack..."

The *Esso Appalachee is* British and she *is* a coaster. Here she was, sitting low in the waters of the Thames and sidling up to the jetty of the Esso Ocean Terminal at Purfleet. Yesterday, she had lain alongside at Fawley, Esso's giant refinery on Southampton Water, and her tanks had received their cargo of some 13,000 tons of liquid fuels and lubricants. And for 20 hours she had butted her way up the Channel and up the Thames.



"...some bicephalous monster..."

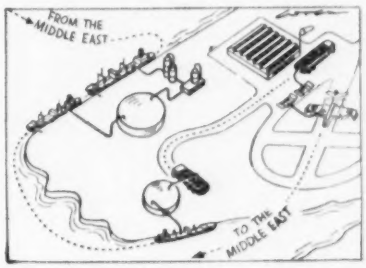
The tanker is not, perhaps, the most beautiful vessel afloat. There are times, in roughish waters, when it appears to consist of two unconnected stacks of superstructure, like some bicephalous monster of the deep. And, indeed, there are times when physical communication between the two ends of a tanker (or fore and aft, as we sailors say) is restricted to the catwalk. Tankers advertise their function so completely, so honestly, in every line and contour that they can be recognised immediately as beasts of burden. Yet knowledgeable seafaring men can discuss the æsthetics of a fleet of tankers with all the enthusiasm of couturiers at a fashion parade—or air attachés at an S.B.A.C. Show. Captain Rothwell's opinion of the *Esso Appalachee* was that she " responded beautifully," " carried herself well," and looked " every inch a good ship." And that was good enough for me—the marine equivalent of " sweet on the controls," " viceless," and " looks right," of course.

Captain Rothwell, genial giant of the jetty, coaxed the tanker into position (through his megaphone) and we scrambled aboard.

"...genial giant of the jetty..."

The Skipper greeted us on the bridge, fortified us against a chilly south-easter with a nip of rum, and handed us over to the Chief Engineer and a conducted tour. We inspected the ship from stem to stern and pronounced it shipshape : we examined the engines, the tanks, the galleys, the bunks . . . and we were astounded that the immense task of unloading a ship of such size could be accomplished with such little fuss. First, the inspection by Ocean Terminal experts of each of the tanks : then the quiet, purposeful teamwork of the men who connect the tanker's cargo with the shore storage installations. Then the steady pumping, and the manifest relief of the *Esso Appalachee* when, relieved of her burden, she could stretch herself again.

Purfleet is one of a dozen Ocean Terminals through which Fawley pumps its products. Here, fuels and lubricants are stored, blended and tested . . . and tested . . . before being dispatched by road, rail and river to smaller depots. Purfleet is, of course, the nerve-centre of Metropolitan distribution. Every day the *Esso Abingdon*, a handsome river tanker, sets off up river with about 500 tons of Esso products, which she delivers at either Fulham or Silvertown. Every day many smaller tankers fill up at Purfleet and *phut-phut* it to thirsty customers along the banks of the



Thames. And every day airfields in the region are supplied with fuels and lubricants by Purfleet's platoon of road tankers. Altogether some 35,000 tons of Esso products are pumped into active circulation every week—which means that the Purfleet Terminal receives supplies from about 150 ocean-going tankers each year.

Until Fawley went " on stream " these tankers brought refined fuels from overseas, chiefly from the Gulf of Mexico, and the homeward trip lasted three weeks : now, they run a shuttle service between Southampton Water and the Thames, and deliver the goods in less than one day. Fawley has meant a vast saving in dollars : Purfleet and the other Ocean Terminals are key factors in Esso's massive and economical system of distribution.

We were so impressed by it all that one of us wanted to borrow Cap'n Rothwell's megaphone in order to tell every seagull in the neighbourhood that

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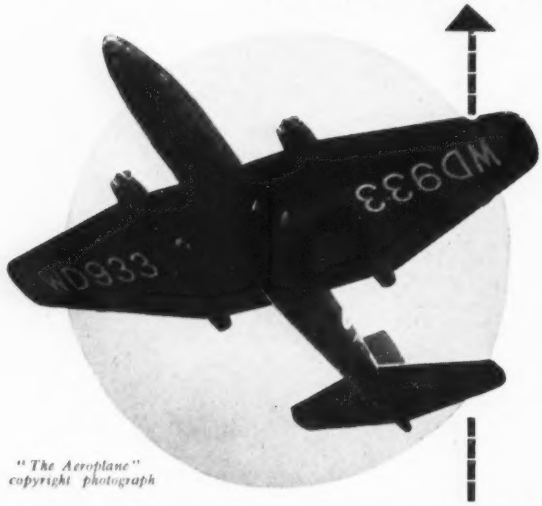

"The Aeroplane" copyright photograph

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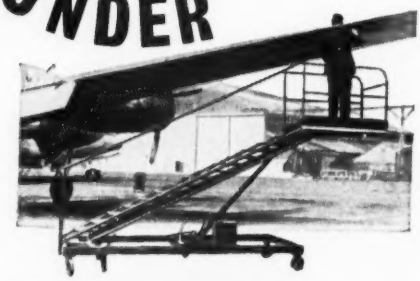

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CIVIL AVIATION

Capt. W. B. Houston.

BRITANNIA PREPARATIONS

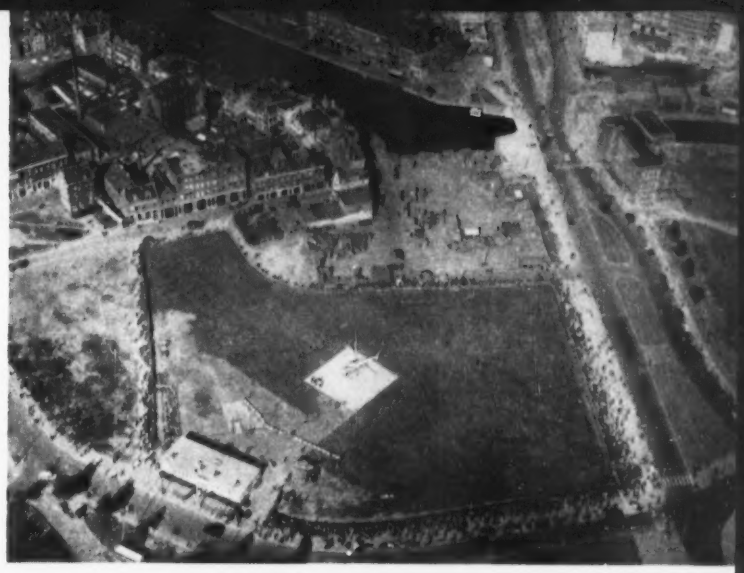
IN preparation for delivery of the first Bristol Britannias next year, B.O.A.C. are forming the nucleus of a new organization to operate the turboprop fleet. Capt. W. B. Houston, manager of the Hermes and York Fleet, has been nominated as manager of the new Britannia Fleet. Aged 44, Capt. Houston joined Imperial Airways in 1937 after service with the Auxiliary Air Force. Types in his log-book include the Heracles, Albatross and Ensign.

Twenty-six Britannias have been ordered by B.O.A.C., of which ten will be Mk 300s with "stretched" fuselages—10ft 3in longer than the Mk 100 now in production and with gross weight increased by 15,000 lb to 155,000 lb. The Corporation are also negotiating for three Mk 200 freighters, with an option on a further two, and have just announced an option on five Mk 250 airliner/freighters. The "200" and "250" also have the extra fuselage length. The initial batch of Britannias—Mk 100s—will be powered by four 3,780 e.h.p. Proteus 705s; all later variants will use the 4,150 e.h.p. Proteus 750.

B.O.A.C. TEST AVON-COMET

COMET G-ALYT—the Series 1 airframe fitted with four Rolls-Royce Avon 502s—has been lent to B.O.A.C. by the Ministry of Supply to expedite the planning of operations with a fleet of twelve Comet 2s. Regular Comet services to South America are to begin next year. The Avon-Comet was delivered on July 31st to the Operations Development Unit; Capt. H. J. Field made a number of flights to determine consumption and performance characteristics and the aircraft was then handed on to the Comet Fleet. As part of these initial trials with the forerunner of the Comet 2, Capts. Majendie, Rodley and Cane will familiarize crews with the technique of handling the Rolls-Royce axial turbojets. Most of the flying will take place in this country, although an experimental trip to South America is planned for September.

STARTING-POINT for the new Sabena service is Brussels Heliport, at the Allée Verte. The S-55 is seen just before departing on its 1 hr 10 min flight to Rotterdam. Twice-daily mail services are at present being flown; passengers will be carried from September.



SABENA pioneered the world's first international helicopter service on August 3rd, when Capt. A. Vernieuwe flew a Sikorsky S-55 from Brussels to Rotterdam. Here is a helicopter's-eye view of Rotterdam Heliport, only 200 yd from the city centre, on the inaugural day.

NEW FERRY RECORDS

TRAFFIC records continue to be broken by Silver City Airways. Between Friday, July 31st, and Monday, August 3rd, the company's aircraft made over 600 crossings of the English Channel. On the Saturday, when some 850 vehicles and 2,200 passengers flew between England and France, Bristol Freighters and Super-freighters were taking-off or landing at Lympne every 2 min 18 sec throughout the operating day.

AQUILA'S NEW BOATS

AT present operating one 42-seat Solent and a 31-seat Hythe on the Southampton-Madeira route, Aquila Airways announce that another Solent will enter service early in December. It will be followed, next year, by two more Hythes. All of the three new flying-boats have been bought from the Ministry of Supply; they are at present being fitted-out at Southampton.

Aquila's managing director, W/C. Barry Aikman, has announced a 100 per cent increase in the company's summer traffic. Introduction of the new aircraft will enable the company to use Solents only on the Southampton-Madeira route, operating the Hythes between Madeira and Lisbon and Las Palmas (Canary Islands).

AIR TRANSPORT ADVISORY COUNCIL'S REPORT

PUBLISHED on July 31st, the latest report of the Air Transpor Advisory Council covers the period January 1st, 1952, to March 31st, 1953, and is therefore concerned largely with the effect upon the Council's work of the modified civil-aviation policy introduced by the present Government last summer. The primary task of the Council is to advise the Minister of Civil Aviation on applications made by the Corporations and by independent companies to operate scheduled services, the manner in which it performs this task having been set out in the new "terms of reference" issued by the Minister on July 30th, 1952.

The first application submitted under this arrangement reached the Council on August 14th and by March 31st, 1953, the end of the period covered by the report, the total number of applications was 184—18 from the Corporations and 166 from the independent companies. Of these applications, 63 were for normal scheduled services, 57 for internal services, 25 for colonial coach services, 13 for inclusive tours, 21 for all-freight services and 5 for vehicle ferry services. At the end of the period reviewed the Council had recommended to the Minister that 103 of these applications should be approved, subject to certain conditions, and that 37 should be rejected. An appendix to the report contains a summary of the applications made up to March 31st together with a note on the decision taken in each case by the Minister.

Although the report observes that it is too early to assess the results of its consideration of applications under this new policy, it notes that "several of the new services are frankly experimental and it is only to be expected that a few may in the event prove uneconomic." However, the report reaches the broad conclusion that: "A large number of the new applications submitted were for services of considerable public interest. The Corporations were able to retain flexibility of their planning and development by the introduction of appropriate additions and variations to their services, and, without jeopardizing their overseas networks of the internal services of B.E.A. . . . new opportunities in certain definite fields were made available to the independent companies . . . Such services as were approved for new routes

CIVIL AVIATION . . .

or a new class of traffic should prove of benefit to the public without having a detrimental effect on the existing services of B.O.A.C. and B.E.A."

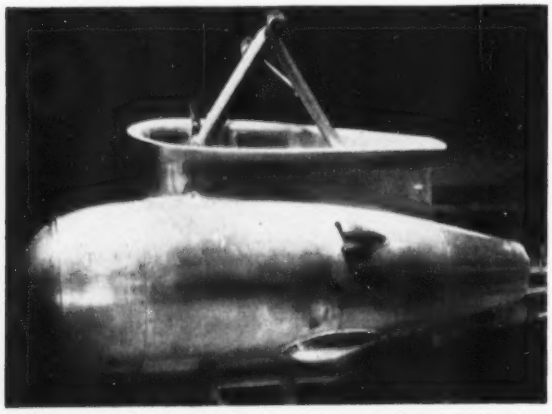
Objections to applications were made by both Corporations and independents, often taking the form of counter applications; on other occasions the objection maintained that the proposed service would divert traffic from established or reserved services or that the application was in some way ineligible for consideration. Most applications for internal services were objected to by the Railway Executive, who claimed that the proposed services would create wasteful competition and would constitute a drain on the revenue of the British Transport Commission.

Most of the unsuccessful applications, states the report, were rejected for one or more of the following reasons: (a) Another applicant appeared likely to be able to offer an air service which would serve the same traffic areas, be more satisfactory to travelling public, and offer more prospect of successful economic development. In some cases this was because the successful applicant proposed to operate several complementary services; (b) The proposed service would materially divert traffic from a normal scheduled service operated by one of the Airways Corporations on a reserved route, or from some other service of a corporation or an independent company which was established or approved or had already been recommended by the Council for approval. Alternatively the proposed service would serve the same traffic areas as any of these services; (c) The proposed all-freight service was likely to undermine the position of an established operator on the route; (d) The applicant lacked general operating experience and was not considered competent to operate the route in question; (e) The applicant did not appear to have sufficient resources to maintain and develop the proposed service in accordance with the requirements of the terms of reference; (f) Some of the necessary aerodrome and ground facilities could not be made available; (g) Permission for the proposed service to operate could not be obtained on acceptable terms from the foreign or other administrations concerned.

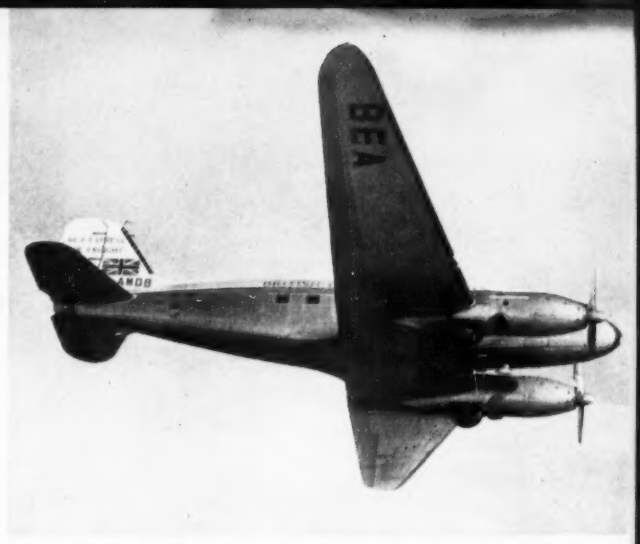
IN PRAISE OF THE VISCOUNT

IN the July issue of the *B.E.A. Magazine*, chief executive Peter Masefield writes enthusiastically of the results of the first 2,000 hr of scheduled services with Viscounts. Although the new turboprop airliner has been flying during the busy season over the most lucrative routes at a 73 per cent revenue load factor, Mr. Masefield emphasizes that the Viscount is already operating on the lowest cost per ton-mile of any type in the fleet. Revenue earned by 2,000 hr of Viscount operations at £224 per flying hour less £380,000 total cost (including the full rate of amortization and 4½ per cent interest on capital) left a profit of £68,000—or £34 per flying hour. On this basis the Viscount's break-even load factor was 62 per cent. Viscounts carried 16,400 passengers in their first 2,000 hours over an average flight distance of 474 statute miles; the corresponding average flight time was 2 hr 45 min. Quoting these and other impressive figures, Mr. Masefield describes them as the "best advertisement for the Viscount that there can be."

Viscounts will fly one weekly London-Lisbon service from October 6th, when B.E.A. return to this route. Winter schedules will also see the introduction of daily first-class Viscount services from London to Glasgow ("The Clansman") and London to Belfast ("The Ulster Flier").



BOOSTER: Two of these pods, each containing an 880 lb thrust Marboré turbojet, will—as reported in the adjacent paragraph—be slung beneath El Al's C-46s to improve take-off performance.



. . . AND THEN THERE WERE NONE: One of the two Dart-Dakotas used by B.E.A. for engine development (G-ALXN) is already back in service as a standard Pionair Leopard. The other, illustrated here, will soon make a final turbine-powered flight to Renfrew, where the Darts will be replaced by Twin Wasps.

WEATHER-SHIP CONFERENCE DEADLOCK

CONVENED by I.C.A.O. at Brighton last month, the third conference on North Atlantic ocean stations attempted to allocate the financial and operational responsibility involved in maintaining the ten floating weather stations which provide meteorological and navigational aids for aircraft and serve as floating search and rescue vessels. Twenty-five ships are required to operate these stations, which are maintained (by the several nations whose aircraft make use of them) under an agreement signed in 1946 and revised in 1949. This agreement was to have expired on July 1st, 1953, but was extended for one year. Three of the ships operated by the United States are being withdrawn and although the conference discussed the problem in some detail, replacements from other nations were not forthcoming. The only result of this conference appears to have been a resolution to convene a further conference, if possible before the end of the year, to determine the number of stations which will be "technically adequate" in the North Atlantic region and to agree upon responsibilities for their operation.

MARBORÉS FOR EL AL COMMANDOS

FURTHER details are announced by El Al Israel Airlines of their plan to equip each of their C-46 Commandos with two Turboméca Marboré II auxiliary jets beneath the fuselage. The installation was designed by Dr. E. Schatzki, a former Lufthansa pilot and engineer who emigrated to the United States before the war and spent some years with the Republic Aviation Corporation.

The Marboré develops a static thrust of 880 lb and has a dry weight of 290 lb. The streamlined pod developed for El Al weighs 425 lb and embodies "eyelid" doors which are closed when the jet is not in action. The two pods are attached to the Commando's fuselage, approximately at the c.g. position, by a three-bolt connection; they are interchangeable and can be replaced in 20 minutes. The two supporting members are enclosed in a fairing which also contains electrical, fuel and fire-extinguishing connections. El Al's auxiliary jets will use ordinary 100/130 octane fuel from the existing system. The Marboré's fuel consumption, incidentally, is quoted at 170 gallons per hour at take-off and 133 gallons per hour at maximum continuous power.

The addition of the jet units entails practically no structural reinforcement of the Commando and only a small number of minor modifications, including the installation of three instruments serving both units and indicating r.p.m., oil-pressure and -temperature, and jet-pipe temperature. A firewall will be inserted between the fuselage and the pod, and the existing de-icing system will be extended to protect the air intake.

Dr. Schatzki suggests that installation of two Marborés may be the most promising solution yet offered to the American operators' twin problem of flying the C-46 at a more economical all-up weight than the 45,300 lb permitted at present and of meeting new C.A.A. performance requirements by December 31st next. He claims that the extra thrust provided by the Marborés enables the C-46 to take-off 10,000 lb heavier without any loss of performance. It is estimated that the take-off performance of El Al's boosted Commandos at 50,000 lb will be comparable to that of a standard C-46 at a gross weight of only 40,000 lb. Automatic controls are provided to prevent the Marborés from over-heating or over-speeding in flight.

LONDON AIRPORT ACOUSTICS

INITIAL proving tests of the acoustic screen wall at London Airport on July 9th have, according to the M.C.A., confirmed that the wall will bring about an appreciable amount of noise reduction. However, further experiments will be needed before its effectiveness in varying conditions can be assessed accurately, taking into account the acoustic effect of its environs and the prospect of its improvement by modification. Further experiments planned for the near future include operating tests to assess the practical problems involved in the regular use of the wall by various types of aircraft, including jets, for normal engine-running after maintenance. The preliminary test referred to was reported in *Flight* of July 17th.

BREVITIES

SIR JOHN URE PRIMROSE, Lord Provost of Perth, has resigned from the Scottish Advisory Council on Civil Aviation to draw attention to "the injustice being done to Perth and Dundee" by B.E.A.'s refusal to operate scheduled services from Errol, Perthshire. Proposals to operate such services were finally rejected on July 30th as being "financially impossible."

* * *

Philippine Air Lines announce the appointment of Mr. Al Wagstaff as their district manager in London.

* * *

Mr. John Brancker.

Pictured on the left is Mr. John Brancker, formerly general manager of international affairs for B.O.A.C., whose appointment as traffic director of I.A.T.A. was announced in *Flight* last week. A son of Maj. Gen. Sir W. Sefton Brancker, who founded I.A.T.A. in 1919, Mr. Brancker joined Imperial Airways in 1929. He has been active in the work of I.A.T.A. traffic conferences, and served as chairman of the former traffic committee.

Thai Airways are reported to have ordered two Lockheed Super Constellations for delivery in 1955. This company at present operates domestic and international services with DC-4s and DC-3s.

* * *

Mr. A. Campbell Buchanan has been appointed manager of B.O.A.C.'s new sales and reservations office at Dallas, Texas, headquarters for a sales area with a population of over 14½ million.

* * *

The first prototype of the Max Holste 1521 bush transport recently completed tropical trials and a second is now undergoing a 50 hr "reliability trial." It is expected that after a further 200 hr flight testing the type will be given a C. of A. for passenger work.

* * *

Decca Radar, Ltd., have received an order for the installation of their new type 424 radar at Woolsington, the muncipal airport for Newcastle. This equipment, which will be shown at Farnborough, is designed to provide both landing and area control (within 25 miles) at low cost. The company also announces its election as an associate member of the S.B.A.C.

* * *

K.L.M. announce that regular Super Constellation services across the North Atlantic—from Amsterdam to New York—will begin on August 15th. The new aircraft will operate daily tourist services carrying 78 passengers. The beginning of winter schedules next October will also see their introduction on the Johannesburg, Curacao and Tokyo routes.

FROM THE CLUBS

AT Croydon Airport, the newly formed Croydon Flying Club (Popular Flying Association Group No. 25) has commenced operations with one Taylorcraft Plus D. Annual membership is 10s, and flying is at the attractive rates of 31s 6d (solo) and 40s (dual). The club has vacancies for members holding P.P.L.s, and also a limited number of vacancies for student pilots. Mr. C. B. Young, of 41, Heathfield Vale, Addington, Surrey, is the Hon. Secretary.

THE Penguin Flying Club at Gatwick logged some 280 hours during July—a good figure for a club which at present does not train A.T.C. cadets. During the month, six P.P.L.s and one Commercial Licence were obtained, and four first solos achieved. S/L. J. Keates has recently joined the staff of the club as a full-time instructor. The aircraft fleet comprises five Austers and one Moth Minor and these are reserved for licensed pilots on Monday and Tuesday of each week.

DENHAM FLYING CLUB reports a total of 264 flying hours for the month of July, the highest ever recorded at this club. Licences were obtained by two A.T.C. cadets during the month.

THE recently formed Ramsgate Flying Club now has 186 members, of whom 35 are flying members. The club is operating two Tiger Moths, and the July total of flying hours was 120.

UP to August 5th, flying hours for 1953 for the Portsmouth Aero Club were 1,390, of which 265 were flown last month. This year's total is at present 200 hours up on last year. Other flying totals for July include 350 hours at the Wiltshire School of Flying at Thruxton and 226 hours at Fair Oaks Aero Club.

R.Ae.C. PILOT'S CERTIFICATES ISSUED—JULY, 1953

No.	Name	Cl.	Date	No.	Name	Cl.	Date
28,385	H. Mullings	4	1.7.53	28,396	A. V. Potter	1	20.7.53
28,386	R. C. H. Monk	1	2.7.53	28,397	I. E. Smith	4	22.7.53
28,387	J. H. Wright	2	2.7.53	28,398	R. T. Gausden	2	22.7.53
28,388	P. F. C. A. Thorn	4	3.7.53	28,399	E. W. Clarke	3	22.7.53
28,389	H. C. Willson	2	6.7.53	28,400	C. S. Langsdale	4	23.7.53
28,390	P. L. Levine	4	8.7.53	28,501	J. Ellington	4	23.7.53
28,391	M. Rayward	4	8.7.53	28,502	N. V. J. Salt	1	23.7.53
28,392	D. H. Moffat	4	10.7.53	28,503	N. Shahrabani	2	23.7.53
28,393	A. C. S. Irwin	1	13.7.53	28,504	F. Bayne	4	24.7.53
28,394	E. H. Stuart	1	16.7.53	28,505	P. Fillingham	1	28.7.53
28,395	D. P. Henry	4	18.7.53				

"Flight" photographs

AT THE AIR TOURING COMPETITION: To conserve fuel, aircraft were pushed to the starting line in the Royal Aero Club's recent Air Touring Competition at Panshanger. (Above) Gregory's Taylorcraft is manhandled out; in the background is Robertson's Moth Minor, winner of the contest. (Below) The neat Fairey Junior was flown into sixth place by Miss E. L. Curtis, who is seen in the cockpit just before starting-up.

Proteus Development and the Treasury

Simple "Solutions" for Complicated Problems

AN unusually analytical reference to the cost of developing an aircraft engine—the Proteus—is made by the Committee of Public Accounts in their third report (H.M.S.O., 1s. 3d.) which covers the session 1952-53*. This is the committee—composed of M.P.s from all parties in the House of Commons—whose *raison d'être* is to suggest ways and means of effecting economies in public spending. Their approach is essentially that of the taxpayer in search of value for money, and it is interesting to observe how this simple logic of pounds, shillings, and pence has been applied to the complicated, expensive, and largely unpredictable problem of gas-turbine development.

The particular story of the Proteus is sketched in a section dealing with the Ministry of Supply. A brief narrative describes how, in 1944, the Ministry of Supply started to develop a special type of gas turbine for use in long-range transport aircraft and how by March 31st, 1952, they had placed contracts to an estimated value of over £13,000,000, under which they had then spent nearly £10,000,000 for this work.

Mention is then made of the abandonment of the Proteus 1—at a cost of £3,600,000—the development of the Proteus 2, and, finally, the emergence of Proteus 3 as an engine expected to be suitable for use in the Britannia and to bring in some return on the cost of public funds.

Having noted that development-costs of the different versions appeared to have been affected by changing views on the ultimate use of the Brabazon and Princess, the Committee proceed to describe their investigation of the methods by which the M.o.S. and the Treasury controlled the expenditure involved, much of it on an unsuccessful model.

The Ministry explained that development of engines and of aircraft proceeded to some extent in different streams; the characteristics of available engines were a determining factor in designers' ideas of the sort of aircraft they could have, but the streams came together only when a decision was taken to have an aircraft of a particular size and performance. Such a confluence began in 1945, when it was decided to fit Proteus engines in the Brabazon; but Proteus development thereafter was affected by later decisions as to the number and arrangement of engines in the Brabazon; and subsequently in the Princesses.

When work on the Proteus started, gas turbines were a very new field and it was doubtful if the Ministry then had a reliable estimate of the cost of its development. Subsequent experience had given them more information for judging the cost of developing engines; and while it was still difficult — because of the uncertainty as to the results of experiments still to be carried out—to say what the final cost of a particular development might be, they now produced estimates of the cost of each stage of development and consulted the Treasury before starting on a new stage. Similarly, the Ministry's contractors were authorized to proceed only to definite stages and had to seek fresh authority before starting a further stage.

The Ministry did not think that the cost of developing the Proteus engine had been altogether out of relation to its high efficiency and power; indeed, they expected the cost of another engine, the Avon (which, as they pointed out, was now being developed to a much more advanced stage than was originally contemplated) to be about double that of the Proteus. As regards expenditure of £3,600,000 on development of the unsuccessful type, they stated that at that stage of gas-turbine development nobody could have been expected to know that the technical idea it embodied was not a good one, without building an engine of that type in order to find out.

The Treasury stated that they received annually from the Ministry a development programme setting out in great detail the estimated cost. Proposals for any new development, including a variation on an approved scheme, were submitted to them and they investigated the cost as well as they could. Then, every three months, they received a return of contracts actually placed under the general programme showing the costs involved. There was the additional fact that the defence element of Ministry of Supply development expenditure had to be found within the ceiling of the defence budget. The Treasury thought that the estimating of the Ministry was now reasonably accurate in itself; the trouble was that the background against which the estimates were made was constantly changing. Moreover, it was not very easy to apply extreme economy in carrying out development projects which were extremely urgent and important. A great deal of money was spent in order to get the job done quickly and it might be done more cheaply if there were less haste. While, therefore, the Treasury were reasonably satisfied that development projects could not run very far out of control and that both they and the Ministry were doing their best, they could not say that they were completely satisfied.

Having weighed the evidence outlined above, the Committee preface their comments by stating that they recognize the exceptional difficulties of controlling expenditure on research and development without hampering essential progress. In view, however, of the very large sums now being spent on individual projects and of the limit necessarily imposed on the total sum that can be spent on defence, they consider it essential in the interest of the defence programme as a whole that every effort should be made to ensure that the greatest possible value is obtained for the money spent on development work. They welcome the arrangements for review of costs of individual projects by the Treasury before a new stage of development is authorized. They attach considerable importance to this, but they think that it might well be supplemented by special reviews, to be made at regular intervals by the Ministry's principal technical and financial officers, of the progress made and promise shown in relation to the latest estimated cost. With the result of such reviews before them, the Committee believe, the Treasury would be in a better position to relate costs to probable results, to consider whether the sums available were being spent on the most promising objects, and to put a stop to unpromising schemes at the earliest moment.

The Committee end with the recommendation that the Treasury should review the arrangements for control of expenditure on research and development in order to ensure that the greatest economy consistent with the objects of that expenditure is secured.

The Longer View

With all due respect to the Committee, it may be said that their observations, painstaking in themselves, do no more than scratch the surface of the problem. The idea of a " special review " has a certain attraction; but, on the other hand, it is questionable whether the Treasury would be any more likely to grasp the moral of technical facts specially presented than they are to assimilate the pros and cons of aeronautical development as they emerge in the course of ordinary routine. A further questionable point is whether the Proteus development experience is, in fact, a genuine "test case" on which a firm Governmental line, involving other development by other companies, ought to be taken.

It is to be regretted that more attention was not to be given to the defence aspect, and, in particular, to the situation where development tending more and more to civilian needs is yet controlled by considerations of overall defence expenditure. We can see the validity of the Ministry's case—which might, in fairness, have been expounded at greater length on the floor of the House of Commons—but the uncomfortable feeling persists that here is an arrangement whose inherent anomalies may tend to be accentuated as new and challenging prospects appear upon the international horizon.

Finally, attention might have been directed to the less tangible but nonetheless important aspect of the psychology of vast Government expenditure, and its effect upon the approach of private industry to development.

The time has come, perhaps, when more than lip-service should be paid to the proposition that efficiency and economy can, and indeed must, march hand in hand. There was much to be said for the arrangement whereby Government intervention came only when a project of potential value had been proved in fact, thereby introducing an element of what one might call " healthy " incentive. Incentive will certainly play a great part in the future of the Corporations, whose financial activities are also the subject of scrutiny by the Committee of Public Accounts. The conclusion here is that Exchequer grants to the Corporations are by statute related to the operations of the year, and that the Committee consider it to be incorrect, in any consideration of revision of grant, to have any regard whatever to what may have happened in previous years or to the state of the Corporations' balance-sheets. The point was made that, in considering the B.O.A.C. grant for 1950-51, the Ministry of Civil Aviation appeared to have taken no special steps to satisfy themselves that the whole of the saving recorded was due to the Corporation's own efforts—a doubtful hypothesis in any event—and that in arriving at their decision they took into consideration the deficit that had accumulated in the account over previous years.

**A reference to some of these costs was made in an earlier report by Sir Frank Tribe, the Auditor-General ("Flight," April 3rd, 1953).*

APPOINTMENTS: Left to right: A.V-M. Sir Harry Broadhurst, Air Chief Marshal Sir Robert Foster, A.V-M. L. F. Sinclair, A.V-M. G. Harcourt-Smith, A.V-M. the Earl of Bandon, A.V-M. T. N. McEvoy. Details appear in the first item below.

SERVICE AVIATION

Royal Air Force and Fleet Air Arm News

R.A.F. Appointments

IN addition to the changes in senior posts announced on page 187, the following appointments are notified:—

A.V-M. Sir Harry Broadhurst, K.B.E., C.B., D.S.O., D.F.C., A.F.C., will become C-in-C. of 2nd T.A.F., Germany, from January 1954, with the rank of acting air marshal. He takes the place of Air Chief Marshal Sir Robert M. Foster, K.C.B., C.B.E., D.F.C., who is retiring from the Service.

A.V-M. L. F. Sinclair, G.C., C.B., C.B.E., D.S.O., to be Assistant Chief of the Air Staff (Operations) from November, 1953.

A.V-M. G. Harcourt-Smith, C.B., C.B.E., M.V.O., to be Commandant of the School of Land/Air Warfare, Old Sarum, from October, 1953.

A.V-M. the Earl of Bandon, C.V.O., to be R.A.F. Instructor at the Imperial Defence College, from September, 1953.

A.V-M. T. N. McEvoy, C.B., C.B.E., to be Royal Air Force Instructor at the Imperial Defence College, from September, 1953.

A.V-M. Broadhurst, born in 1905, joined the R.A.F. in 1926. Shortly before the war he commanded No. 111 Sqn., the first to be equipped with Hurricanes, and later became S.A.S.O. and then commander of the Desert Air Force after El Alamein. In 1944 he commanded No. 83 Group, 2nd T.A.F. After becoming S.A.S.O. of 2nd T.A.F. he went to the Air Ministry in May, 1952, as A.C.A.S. (Ops.).

Air Chief Marshal Sir Robert Foster, born in 1898, was in 1916 seconded from the Royal Fusiliers to the R.F.C.; he received an R.A.F. commission in 1919. After the second World War broke out he held various senior positions in the U.K. and the Middle East and then became A.O.C. Malta in March, 1944. He then became A.O.C. Desert Air Force, was subsequently appointed A.O.C. R.A.F. Austria, and also Chief of the Air Division, Control Commission, Austria, from August, 1945. Next, he was A.O.C.-in-C. Home Command until October, 1951, when he was appointed C-in-C. 2nd T.A.F., in Germany.

A.V-M. Sinclair, born in 1908, was commissioned in 1928 after passing through Cranwell. It was as commander of No. 110 Sqn. in 1940 that he received the G.C. for rescuing the crew of a burning aircraft. In 1942 he commanded a wing in North Africa and in 1944 became S.A.S.O. Balkan Air Force. After passing through the Imperial Defence College in 1946 he went to Germany as S.A.S.O. No. 84 Group, B.A.F.O., and was subsequently A.O.C. No. 2 Group B.A.F.O. His most recent appointments were as Commandant of the R.A.F. College, Cranwell, in 1950 and Commandant of the School of Land/Air Warfare.

A.V-M. Harcourt-Smith was commissioned in 1921. For several years before the war he was engaged in various capacities in developing the R.A.F. fighter organization and after the outbreak of war he was with Fighter Command until May, 1943. He then became S.A.S.O. Malta, and, in 1944, S.A.S.O. of Desert Air Force. Subsequently, after commanding the R.A.F. in Greece, he became S.A.S.O., Air Command, S.E. Asia. In 1946 he returned to England to become Air Ministry Director of Organization, then, in 1948, A.O.C. No. 12 Group. His latest appointment was as head of the United Kingdom Service Liaison Staff, Australia.

A.V-M. The Earl of Bandon, born in 1904, was commissioned from Cranwell in 1924. He commanded No. 82 Sqn. in France before Dunkirk, and in 1941-42 he was C.O. of the bomber station at West Raynham; he was then posted to Air H.Q. India, as Staff Officer, Bomber Operations, and subsequently to H.Q. Air Command, S.E. Asia, as the first R.A.F. Operations Officer with the U.S.A.A.F. From 1944 until the end of the war he commanded No. 224 Group in Burma. Since the war he has been Commandant of the R.O.C., A.O.C. No. 2 Group, B.A.F.O., and A.O.C. No. 11 Group, Fighter Command.

A.V-M. McEvoy (born 1904) entered Cranwell in 1923. After the outbreak of war he was transferred from the Directorate of Operations at Air Ministry to the command of the first Polish wing at Northolt in 1941. In 1943 he became S.A.S.O., No. 11 Group, and then S.A.S.O., No. 84 Group, with which he served from the Normandy Invasion till the end of the war. After 1945 he was successively Director of Command and Staff Training, Air Ministry, A.O.C. No. 61 Group, Home Command, and A.C.A.S. (Training).

HARD APORT: A new—and uncommonly pleasing—glimpse of a Fleet Air Arm de Havilland Sea Venom N.F.20, with the latest pattern tail and cockpit enclosure. The fairing for the arrester hook, above and behind the jet pipe, is also seen to advantage.

The Navy Over Korea

DURING the Korean hostilities aircraft of the Royal Navy flew many thousands of sorties on carrier air patrols and attacks on enemy troop concentrations and targets of varying size and importance. Altogether 15,200 bombs were dropped and 57,600 3-inch rockets fired as well as 3,300,000 rounds of 20 mm ammunition. During these operations 22 pilots lost their lives.

Lessons of "Coronet"

FOLLOWING the end of exercise "Coronet" on July 31st, Air Chief Marshal Sir Robert Foster, A.O.C. 2nd A.T.A.F., summed up the lessons of the exercise. He said that the general performance was very satisfactory, though communications left much to be desired. The Belgian and Dutch authorities had been unable to supply his allied force, which contains British, Dutch, and Belgian squadrons in equal proportions, with enough fixed telephone lines fast enough.

Similarly, the radar equipment of his "Westonian" force lagged a good way behind that of the enemy, "Fantasia." The 2nd A.T.A.F. had much new radar equipment coming up, which was excellent, but they still had a great deal of old material. "Without efficient radar one cannot conduct a war," said Sir Robert Foster. Nevertheless "Coronet" had taught excellent lessons to air squadrons operating at short notice on strange airfields several hundred miles from their own bases.

SERVICE AVIATION . . .

Operation "Home-run"

AS recorded in *Flight* recently, the B-29 Washingtons supplied to Bomber Command under M.D.A.P. in 1950 are now being returned to the United States. The return delivery flight of the first four of the 35 B-29s originally delivered to the R.A.F. started from Marham on July 7th, with R.A.F. crews under the command of Capt. Harold Lacouture, an American officer on exchange posting to the R.A.F. The flight took the aircraft *via* Prestwick and Goose Bay, Labrador, to Dover A.F.B., Delaware. There, the crews were given a warm welcome from the governor of the State of Delaware, Mr. J. Caleb Boggs.

During the next 18 months all the R.A.F. Washingtons will be returned to the United States, where they will be delivered to Air Materiel Command for reserve storage or use by operational units.

Southern Air Division Moves

THE Southern Air Division of the R.N.V.R. has now been transferred from R.N.A.S. Culham, Berks, to R.A.F. Benson, Oxfordshire. The division had been based at Culham since 1947.

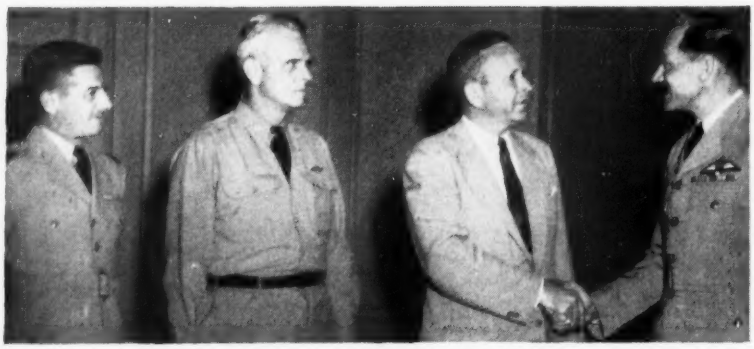
New A.O.C.s for 62 and 3 Groups

THE appointment is announced of A. Cdre. Brian Courtenay Yarde, C.B.E., C.V.O., to succeed A. Cdre. R. Coats as A.O.C. No. 62 Group. Until April 1953, A. Cdre. Yarde was Provost Marshal of the R.A.F. and Chief of the R.A.F. Police.

From July 1947 till November 1949 he had commanded R.A.F. Station Gatow, and for his services in the Berlin airlift he was made a C.B.E. A. Cdre. Coats goes to the Canal Zone as Air Officer i/c. Admin., No. 205 Group, M.E.A.F.

The new A.O.C. of No. 3 Group, Bomber Command, is to be A.V-M. E. C. Hudleston, C.B., C.B.E.; he will take over his duties in September. At the outbreak of war A.V-M. Hudleston was serving as an advisor to the Turkish air force, and he subsequently joined R.A.F. Middle East H.Q. and Mediterranean Air Headquarters. After the Sicily invasion he was S.A.S.O. with No. 1 T.A.F. in Italy and at the age of 36 became A.O.C. of No. 83 Group, 2nd T.A.F., in North-West Europe. After the war he was for some time on the Defence Research Policy Committee at Air Ministry.

DEBDEN DELTA: S/L. Ellis, of R.A.F. Debden, with the striking 1 c.c.-engined model which he entered in the U.K. Championships of the R.A.F. Model Aircraft Association, flown at St. Athan. Results of the contests were recorded in "Flight" last week.



RETURNED WITH THANKS: F/L. Dyke, a member of one of the Washington crews in Operation "Home-run" (see column 1) shakes hands with Governor J. Caleb Boggs of Delaware State. Looking on are W/C. J. Wallace and Col. P. Zartmann, U.S.A.F.

Australian A.M.P. to Retire

IT is announced that the Air Member for Personnel of the Royal Australian Air Force, A.V-M. Bladin, is to retire on August 26th. A.V-M. Bladin, who is 55, joined the R.A.A.F. soon after it was formed in 1921, and was the first member of the Australian forces to be decorated by the U.S. Government in the last war: he was awarded the American Silver Star. He was also the air officer commanding in Darwin at the time of the heavy Japanese bombing raids in 1942; later he came to Britain to join the staff of SHAEF.

H.M.S. "Indomitable" Awards

IN connection with the explosion in the aircraft carrier *Indomitable* off Malta on February 3rd, ten awards and three Posthumous Commendations are announced. The explosion, which occurred in the hangar while aircraft were being refuelled on the flight deck, resulted in 39 casualties, nine of them fatal.

George Medals are awarded to Commissioned Mechanician H. W. Edwards, B.E.M., R.N., and Petty Officer Stoker Mechanic V. H. Stanton.

Edwards gave orders for the shutting down of petrol delivery lines and for danger warnings to be broadcast in the ship; then he made efforts to stop the leak until the explosion occurred. Although badly shaken by the explosion, he proceeded to help to organize the fire-fighting, continuing his efforts without respite for many hours. Stanton, although realizing the danger, attempted to stop the leakage of petrol, and when the explosion occurred he was blown a considerable distance. He helped a badly injured colleague to safety and then checked that all deliveries of petrol had been stopped. Afterwards he did invaluable work in fighting fires.

The M.B.E. is awarded for courage, skill and initiative to Lt. Cdr. J. R. H. Bull, D.S.C., R.N., who was in charge of fire-fighting and damage control measures; Lt. (E) P. A. Cooper, R.N.; Temp. Lt. (L) K. M. E. Mackay, R.N.V.R., and Senior Commissioned Shipwright A. S. R. Saunders, R.N.

The B.E.M. (Military Division) is awarded for courage, skill and initiative to Electrician's Mate (A) E. W. Dawes; Leading Seaman G. R. Dudley, Leading Electrician's Mate S. A. J. Rutter and Electrician A. G. Shott.

Posthumous Commendations for courage, initiative and devotion to duty are awarded to Engineroom Artificer (4th Class) B. H. C. Pugh, Leading Electrician's Mate A. G. W. Rowley, and Electrician's Mate R. Gannon.

Air Marshal Pendred's Command

A REFERENCE to Air Marshal L. F. Pendred, made in last week's account of the Cranwell passing-out parade, should have made it clear that he is A.O.C-in-C. of Flying Training Command, and not of another command as stated.

Canadian Cadets Here

A GROUP of 25 Canadian Air Cadets, on an annual exchange visit, began a 24-day tour of the United Kingdom on August 1st. They arrived in an R.C.A.F. North Star at London Airport on July 31st and were met by Air Marshal H. T. Lydford, A.O.C-in-C. Home Command, A.V-M. W. J. Seward, A.O.C. No. 61 Group and A. Cdre. Costello, senior R.C.A.F. officer in the United Kingdom. A very ambitious programme of visits in England and Scotland has been arranged.

Reserves Club News

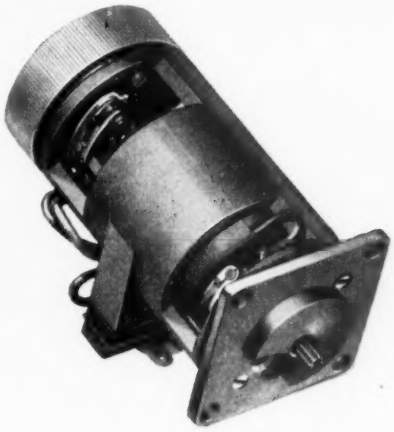
THE R.A.F. Reserves Club luncheon was held recently at the Criterion Restaurant, London, under the chairmanship of the Club's president, Air Chief Marshal Sir Guy Garrod, G.B.E., K.C.B., M.C., D.F.C. The guest speaker, Sir Miles Thomas, D.F.C., chairman of B.O.A.C., gave an interesting talk on past and future operations of that organization.

The secretary of the Club is Mr. H. C. Room, M.B.E., who has recently taken over his duties in the new premises at 14 South Street, Park Lane, W.1.

Reunions

No. 219 Sqn. and Nos. 6219 and 6209 Servicing Echelons, at the Clarendon Restaurant, Hammersmith, at 1830 hr on Saturday, September 26th (dress informal); tickets (£1 5s) from S/L. D. W. B. Farrar, Room 3366, Air Ministry, Whitehall Gardens, London, S.W.1.

No. 50 (Bomber) Squadron, which was reformed at Binbrook in August, 1952, is anxious to contact past members. The tie has recently been redesigned, and now consists of the squadron crest on navy blue; T. M. Lewin and Sons, Ltd., 103 Jermyn Street, London, S.W.1, stock this tie, at 19s 6d (silk) or 15s 6d (silk and rayon).



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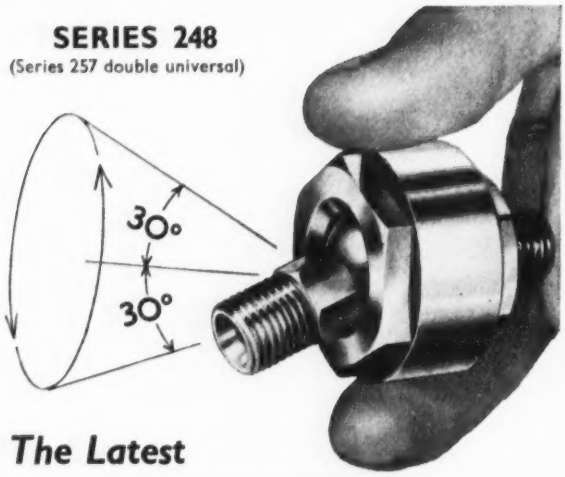

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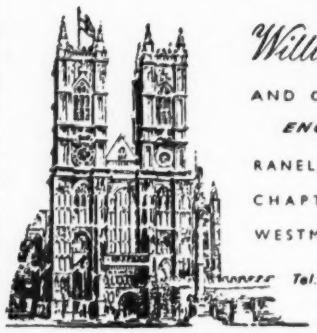

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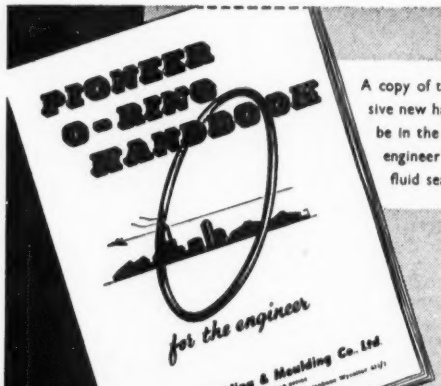

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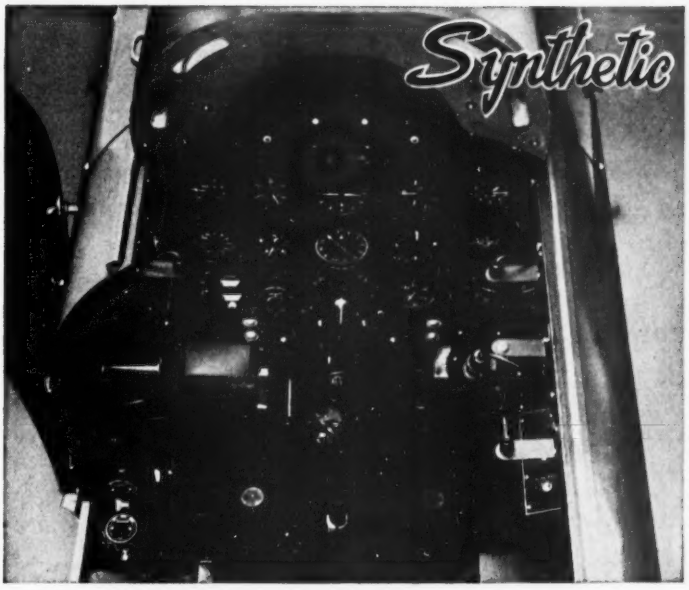

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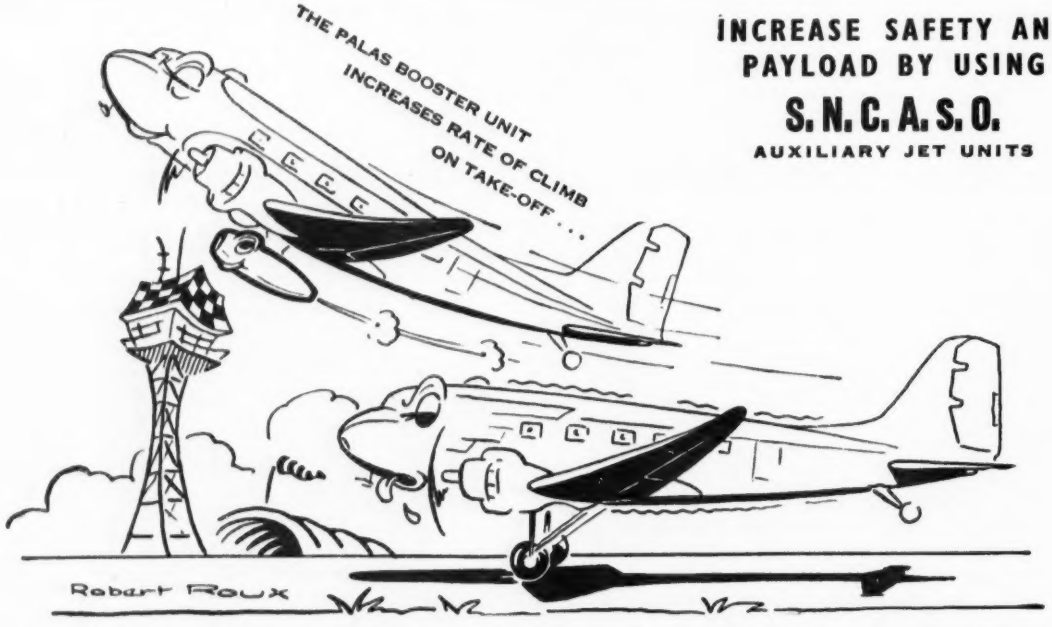

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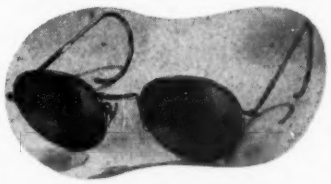

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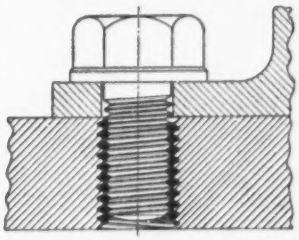

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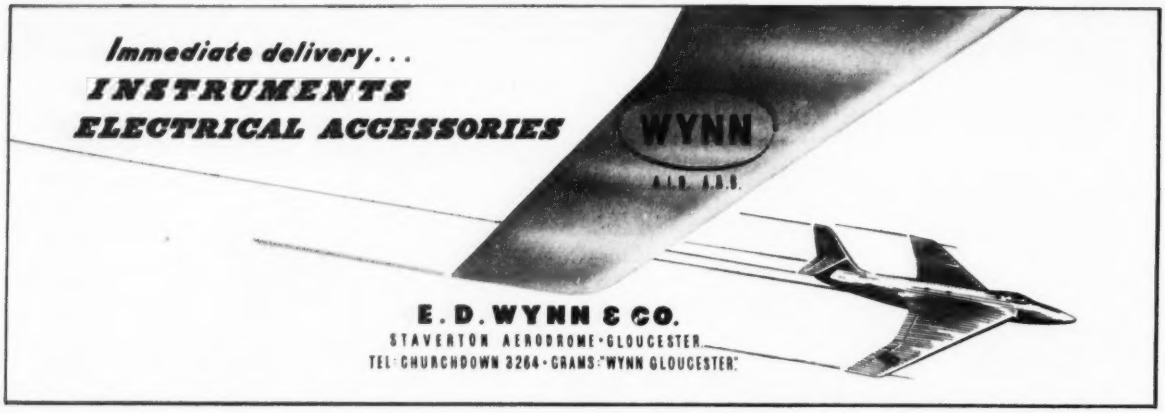

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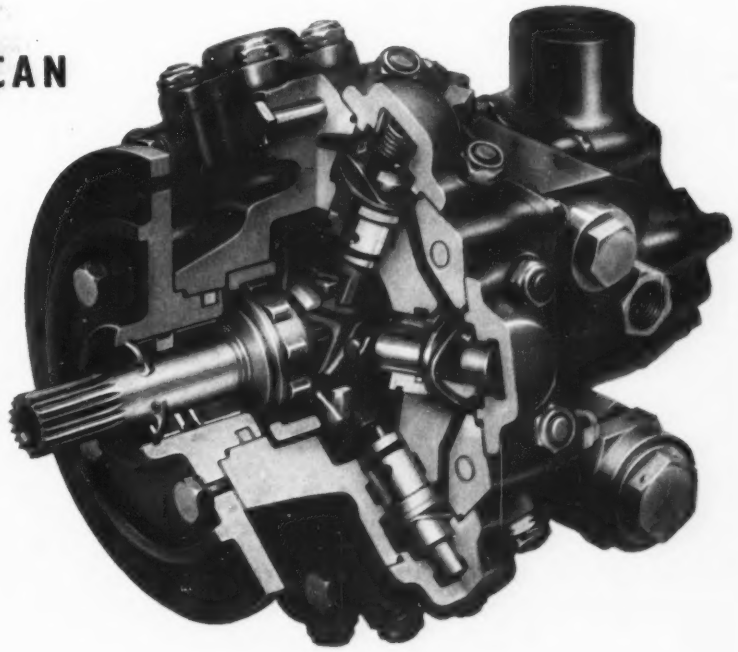

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